ANALYSES

IUCN/TRAFFIC Analyses of the Proposals to Amend the CITES Appendices at the 14th Meeting of the Conference of the Parties

The Hague, Netherlands
3–15 June 2007

Prepared by
IUCN Species Programme and
Species Survival Commission
and TRAFFIC

IUCN
The World Conservation Union

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Production of the 2007 IUCN/TRAFFIC Analyses of the Proposals to Amend the CITES Appendices was made possible through the support of:

- The Commission of the European Union
- Ministry of Agriculture, Nature and Food Quality, Department for Nature, Netherlands
- Ministère de l'écologie et du développement durable, Direction de la nature et des paysages, France
- Ministerio de Medio Ambiente, Dirección General para la Biodiversidad, Spain
- Office vétérinaire fédéral, Switzerland
- Ministero dell'Ambiente e della Tutela del Territorio, Direzione Protezione della Nature, Italy
- Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany
- Department for Environment, Food and Rural Affairs (DEFRA), UK
- Danish Ministry of the Environment, Forest and Nature Agency
- Ministry of Agriculture and Forestry, Environment and Water Management, Division for Nature Conservation and Species Protection, Austria

IUCN -The World Conservation Union brings together states, government agencies and a diverse range of non-governmental organizations in a unique global partnership - over 1,000 members in some 181 countries. As a Union, IUCN seeks to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. IUCN builds on the strengths of its members, networks and partners to enhance their capacity and to support global alliances to safeguard natural resources at local, regional and global levels.

The Species Survival Commission (SSC) is the largest of IUCN's six volunteer commissions. With around 7000 scientists, field researchers, government officials and conservation leaders, the SSC membership is an unmatched source of information about biodiversity conservation. SSC members provide technical and scientific advice to conservation activities throughout the world and to governments, international conventions and conservation organizations. Through the Species Programme, they provide information critical to the development of conservation products and tools such as the IUCN Red List of Threatened Species. SSC works primarily through over a hundred Specialist Groups, some addressing conservation issues related to particular groups of plants and animals while others focus on topical issues such as reintroduction of species into former habitats, or wildlife health.

TRAFFIC the wildlife trade monitoring network, works to ensure that wildlife trade is not a threat to the conservation of nature. TRAFFIC is a joint programme of IUCN - The World Conservation Union and WWF, the global conservation organization.

Citation: IUCN and TRAFFIC. (2007). *IUCN/TRAFFIC Analyses of the Proposals to Amend the CITES Appendices*. Prepared by IUCN Species Programme and TRAFFIC for the Fourteenth Meeting of the Conference of the Parties to CITES. IUCN-The World Conservation Union, Gland, Switzerland.

INTRODUCTION

If CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is to remain a credible instrument for conserving species affected by trade, the decisions of the Parties must be based on the best available scientific and technical information. Recognizing this, IUCN and TRAFFIC, have undertaken to provide technical reviews of the proposals to amend the CITES Appendices. The IUCN Species Programme has collected information on the status and biology of species from its Species Survival Commission Specialist Group network and broader scientific community, and TRAFFIC has focussed on the analysis of the trade and use components of the proposals, drawing on its own information sources and expert networks. The resulting document brings together a broad range of expertise, which we are confident will be of assistance in the discussions of the proposals.

The *Analyses* - as these technical reviews are known - aim to provide as objective an assessment as possible of each amendment proposal against the requirements of the Convention as laid out in the listing criteria elaborated in Resolution Conf. 9.24 (Rev. CoP13) and other Resolutions and Decisions. The review of each proposal consists of a summary section and more detailed supporting text. The summary section presents a synthesis of available information and, in a separate paragraph, a specific analysis of whether the proposal might be considered to meet the pertinent criteria in Resolution Conf. 9.24 (Rev CoP13) or not. Where particularly relevant, some observations on enforcement issues may also be made. The more detailed supporting text is presented in table form. These tables are designed to focus attention on the biological and trade criteria and the precautionary measures of Resolution Conf. 9.24 (Rev CoP13). Text in the left hand side is culled from the supporting statement provided by the proponents of that proposal. Text in the right hand side consists of comments, observations and additional information obtained in the review process.

The approach taken for preparation of the Analyses followed that used successfully in preparation of the Analyses for COP13. Following the deadline for Parties' submission of amendment proposals (4th January 2007), the review team compiled available information to prepare a first draft review. These drafts, together with a series of additional questions and clarifications were then sent to a variety of reviewers for comment and reviewers' responses were compiled into the final document.

To satisfy the needs of the Parties for information well before the CoP, the reviews were completed and available on the web on 30th March 2007. The summary sections are being distributed widely to reach as broad a target audience as possible. The background material will be available separately on the Internet and via e-mail.

These analyses aim to highlight relevant information on which the Parties can base their judgements, not to be exhaustive. Clearly there may be omissions and differences of interpretation in a document compiled on a wide range of species in such a short time. We have nevertheless tried to ensure that the document is factual and objective. It can be challenging to reflect reviewers' responses in a balanced manner, particularly when strong views are held and the information presented is of variable quality, and it has not always been possible to provide a consensus picture. The compilers take full responsibility for any misrepresentation.

A summary of the CITES listing criteria and the IUCN Red List Categories and Criteria is provided as an annex to the document. It should be emphasized that the numerical guidelines in Resolution Conf 9.24 (Rev CoP13), Annex 5 are not thresholds and may not be appropriate for all species. References to source material are provided wherever possible; in some cases, these sources have been consulted directly; in others, they have been cited by reviewers to support their statements. Where information is not referenced, it should be assumed that the source is IUCN or TRAFFIC. The assessments expressed in this publication do not necessarily reflect those of IUCN or TRAFFIC, nor the reviewers as a body. CITES Trade Data refer to data from CITES Annual Reports as provided by the Parties and managed by UNEP-WCMC. Where information has been provided from a particular country's official trade statistics, this has been specified.

ACKNOWLEDGEMENTS AND CREDITS

Many individuals and institutions contributed to the review of the CITES amendment proposals and compilation of the present Analyses. Those to whom we would first like to extend our thanks are the reviewers of these proposals, many of them members of the IUCN Species Survival Commission Specialist Groups, as well as the many other scientists and experts from other institutions who, although not formally linked with SSC, have volunteered their time and expertise to this process.

The staff members of TRAFFIC who assisted in the review of proposals and compiled trade and use accounts, deserve recognition for the contribution they have made to this document. Particular thanks to David Newton who provided significant input to the analyses of proposals for flora. In addition, John Caldwell of the UNEP-World Conservation Monitoring Centre assisted in providing information from the CITES database as well as bibliographic and other reference material. We would also like to thank the French translators Daniele and Richard Devitre and the team of Spanish translators headed by Wendy Byrnes.

The Analyses team was made up of: Martin Jenkins, Thomasina Oldfield and Aradhna Mathur from IUCN, Steven Broad and Roland Melisch at TRAFFIC, Sara Oldfield and Belinda Hawkins at BGCI, Carol Inskipp, Helen Scales and Tim Inskipp. Jane Smart, Sue Mainka and Imène Meliane at IUCN and Holly Dublin, Chair of the SSC provided valuable input. Tiina Rajamets and Julie Gray provided much assistance with copy editing and formatting. Kim Lochen and Richard Thomas at TRAFFIC assisted with design and Andrew McMullin and Abigail Powell of IUCN/SP gave much needed support in the final stages. Those responsible for overseeing the project were Martin Jenkins, Roland Melisch (TRAFFIC) and Thomasina Oldfield (IUCN), who accept responsibility for the contents.

List of Analyses

Transfer of *Nycticebus* spp. from Appendix II to Appendix I.

Proponent: Cambodia.

Summary: The lorises of the genus *Nycticebus* are prosimians, an ancient group of nocturnal primates. Current CITES taxonomy recognises two species, *N. coucang* and *N. pygmaeus*. The Supporting Statement recognises three species (*Nycticebus bengalensis*, *Nycticebus pygmaeus, Nycticebus coucang)* whereas some other authors recognise four or more. They occur in South and South-East Asia, from north-east India and southern China south to western Indonesia. There are very few population data and estimates of wild population sizes vary greatly. All species are relatively widespread but populations are believed to have been affected by deforestation and exploitation. The precise impacts of habitat conversion remain unclear as according to some reports lorises may adapt quite well to fragmented and secondary forests. They are relatively long-lived (up to 20 years), and have a low reproductive rate for primates their size: females do not give birth until they are 3.5 years old, thereafter producing one young every two years or so. There is apparently extensive, but largely unquantified, domestic use of all the species for pets, food and traditional medicine in several range States, as well as demand for regional and international pet markets.

Nycticebus coucang was listed in Appendix II in 1975; all other species were included when the order Primates was included in Appendix II in 1977. The CITES Trade Data show that since the original listing, about 860 live wild *N. coucang* (including *N. bengalensis*) have been reported as exports, mainly from the range States Lao PDR, Thailand and Singapore, with a peak of 375 in 1987 and dropping to almost nil in 2005. Japan, Singapore, the USA and China were the main importers, with Singapore re-exporting many of their imports. Illegal trade has been reported for all species from a number of range States but is almost entirely unquantified. There is also some reported trade in captive-bred specimens. The species are protected nationally in most countries, and are known to occur in protected areas in several countries. *N. coucang* (including *N. bengalensis*) and *N. pygmaeus* have been captive-bred but the numbers involved are not known.

The proponent seeks to transfer the genus *Nycticebus* from Appendix II to Appendix I in accordance with Article II, paragraph 1, of the Convention, and with criteria A i) and v) as well as C i) and ii) of Resolution Conf. 9.24 (Rev. CoP 13), Annex 1, for *Nycticebus bengalensis* and *Nycticebus pygmaeus* and criteria C i) and ii) of Resolution Conf. 9.24 (Rev. CoP 13), Annex 1, for *Nycticebus coucang.*

Analysis: There is insufficient information to determine whether any of the *Nycticebus* species meets the biological criteria for inclusion in Appendix I, whether two or three species are recognised. None of the species has a restricted area of distribution and it seems unlikely that any has a small wild population according to the guidelines in Resolution Conf. 9.24 (Rev. CoP 13) (although this could conceivably be the case for *N. pygmaeus* were its population in Lao PDR to be much lower than is generally assumed). In the absence of historical population data, population declines are inferred from declines in extent of available habitat and the presumed impact of other factors. Habitat loss has been considerable through much of the range of each of the species although it is again not clear that resulting overall population declines would qualify the species for inclusion in Appendix I under the guidelines in Resolution Conf. 9.24 (Rev. CoP 13), particularly as *Nycticebus* species reportedly adapt quite well to secondary habitats. The species are in international trade, but current information indicates that the extent of that trade is relatively limited and its impact likely to be insignificant compared with other factors.

Supporting Statement (SS)	Additional information
Taxonomy	
N. bengalensis *N. coucang* *N. pygmaeus* In addition, *N. javanicus* is treated as a species distinct from *N. coucang* by e.g. Eudey *et al.* (2000). It is mentioned that the CITES adopted reference for mammals (Wilson and Reeder, 1993) treats *N. bengalensis* as conspecific with *N. coucang*.	*The SS follows Brandon-Jones* et al. *(2004) for taxonomy. If Wilson and Reeder (2005) is adopted by the CITES Parties at CoP 14 then the SS treatment agrees with that reference.* *Chen* et al. *(2006) analysed the molecular phylogeny of the genus and found that most of the major groups were distinct, except for some mixing of* N. coucang coucang *and* N. bengalensis*, which may be due to hybridisation*. N. coucang menagensis *was well*

Supporting Statement (SS)	Additional information
	discriminated from N. c. coucang *and there is good evidence for regarding it as a separate species*. *The data did not provide direct evidence for or against the proposal to treat* N. coucang javanicus *as a distinct species.* *Groves and Maryanto (in press) designate* N. menagensis *as a distinct species. Roos (2003) found genetic evidence for distinction of* coucang, menagensis, pygmaeus, javanicus *and* bengalensis *as distinct species (with* javanicus *most closely allied to* bengalensis*). Nekaris and Jaffe (in review) found extremely strong evidence for* javanicus *as a species with two forms, and for two forms within Sumatra.*
Range	
N. bengalensis: Bangladesh, Cambodia, China, India, Lao PDR, Myanmar, Thailand, Vietnam. *N*. *coucang:* Brunei Darussalam; Indonesia; Malaysia; Philippines; Singapore; Thailand. *N*. *pygmaeus*: Cambodia, China, Lao PDR, Vietnam.	N. bengalensis *has also been recorded in Bhutan (Wikramanayake and Wangchuk, 1993).*
IUCN Global Category	
N. bengalensis: DD *N. coucang coucang*: LR/lc *N*. *coucang javanicus*: DD *N*. *coucang menagensis*: DD *N*. *pygmaeus*: VU A1cd The IUCN Red List (2006) treated *N. javanicus* as a separate species.	*N. bengalensis (Assessed 2000, Criteria version 2.3).* *N. coucang (Assessed 2000, Criteria version 2.3).* *N. pygmaeus (Assessed 2000, Criteria version 2.3).*

Biological criteria for inclusion in Appendix I

A) Small wild population

(i) Population or habitat decline; (ii) small sub-populations; (iii) one sub-population; (iv) large population fluctuations; (v) high vulnerability

There is evidence that the three *Nycticebus* species exist in small wild populations throughout their ranges, although population information in many regions is scarce. Population declines are also noted in the three species

N. bengalensis: in China, less than 50 individuals in Wuliangshan and Ailaoshan, Yunnan, and 1 500–2 000 individuals in an area of 300–500 km^2 in south and west Yunnan. Numbers in India have declined from a 1992 estimate of 16–17 000, based on habitat availability, to 'small numbers', and it is now claimed that there are only rare and isolated populations in the country. Numbers in the Indo-Chinese subregion were estimated as 923 337 individuals in 1987, based on an assessment of suitable habitat but it is thought that the population now must be much smaller. Several local extinctions have been recorded in Vietnam.

Habitat for *N. bengalensis* has been seriously degraded over its range with estimated forest losses of: 7% from 1990–2000 in Bangladesh (9% remaining); 55% in NE India; 75% by 1987 in the Indo-Chinese region and continuing; 14% in Myanmar; and 26% in Thailand from 1990–2000 (also for *N. coucang*).

Being nocturnal the species in this genus are difficult to survey so general impressions of population numbers may be misleading.

In India the 'small numbers' of N. bengalensis *were based on two surveys, which were admitted to be of limited extent and may have seriously underestimated the numbers involved. Radhakrishna* et al. *(2006) observed encounter rates varying from 0.1 to 0.77 per kilometre.*

In Lao PDR, N. bengalensis *has been described as 'obviously locally common', occurring in large forest tracts (Molur* et al., *2003), which suggests the existence of reasonable numbers. Duckworth* et al. *(1999) noted taxonomic uncertainty regarding the larger lorises of Lao PDR and stated: 'one or more form of large loris is still well distributed and at least locally common in Lao PDR, at least below 500 m, with records in most survey areas with adequate nocturnal survey work.'*

The local extinctions noted in Vietnam were based on short surveys that failed to find any N. bengalensis. *The species was observed in one such area subsequently (Long*, *2007).*

The habitat declines for N. bengalensis *may be*

Supporting Statement (SS)	Additional information
	*significant in terms of a small remaining wild population in China and Vietnam but the situation is not clear in other range States. In the core of its range in Myanmar (14% forest loss) and Thailand (26% forest loss) there are large areas of suitable habitat forest still remaining. However, Nekaris (*2007*) considers that there is considerable variation within* N. bengalensis *which may constitute several species, some of which are likely to have very restricted ranges.*
N. pygmaeus: There is an estimate of less than 500 individuals in Yunnan, China. Estimates from the 1980s for Vietnam were highly variable (600–700 vs 72 000) but the higher estimate is believed to have been optimistic and the population is thought to have declined since then. In Lao PDR a 1999 status report, based on the availability of suitable habitat, described the species as 'little known' and 'common', whereas the EU described it as 'apparently widespread but not common anywhere'.	*Duckworth* et al. *(1999) noted uncertainty regarding the taxonomic identity of the smaller lorises in Lao PDR, but observed that large and small forms were sympatric in at least some areas. Until this was resolved, they thought it best to consider the named species* N. pygmaeus *as Little Known (that is one whose conservation status in Lao PDR was difficult to assess), while accepting that it may turn out to be common and widespread and of no immediate conservation concern.* *Nekaris* et al. *(in prep.) provide evidence that it occurs at a low density at one site in Lao PDR and is rare in another area.* *The SS notes in relation to two conflicting population estimates for* N. pygmaeus *in Vietnam that 'this enormous discrepancy underlines the difficulty to calculate population size without detailed field studies'. However, Nekaris (*2007*) notes that differing numbers can be a real reflection of differing populations in different areas. In Southeast Asia, factors such as distance from a town, different ethnic groups (e.g. hunters, taboo, use of traditional medicine) can vary in impact on lorises. The distance from agriculture (e.g. pesticides affecting natural insect food resources) can also affect them. The degree of disturbance of forest also plays a major role.*
For both ***N. bengalensis*** and ***N. pygmaeus*** there have been forest losses of 6% annually in the 1990s in Cambodia; 42% in Yunnan, China from 1995–2005; and in Vietnam only 30% of the original forest cover remains (of which only 10% is rich closed-canopy forest).	*Although the status of* N. bengalensis *is poorly known in some areas Nekaris (*2007*) considers that recent surveys have demonstrated that* javanicus*,* menagensis*,* pygmaeus *and many populations of* coucang *(which are likely to refer to numerous different species) are depleted and threatened.*
Nycticebus spp. have low fecundity (females give birth to one, rarely two offspring every 12–18 months); they reach sexual maturity at 20 months; undergo a prolonged gestation (184–197 days in *N. coucang*); they have lactation periods of up to 213 days and are long-lived (up to 20 years). With such limited reproductive rates, it is suggested that these species cannot withstand a large scale off-take.	*The vulnerability of lorises to capture is presumably exacerbated by their slow movements and sluggish lifestyle, a likely consequence of ingesting large quantities of toxic plant material (Wiens, 2006).*

B) Restricted area of distribution

(i) Fragmented or localised population; (ii) large fluctuations in distribution or sub-populations; (iii) high vulnerability; (iv) decrease in distribution, population, area or quality of habitat, or recruitment

	No currently recognised species has a restricted area of distribution.

Supporting Statement (SS)	Additional information
C) Decline in number of wild individuals **(i) Ongoing or historic decline; (ii) inferred or projected decline**	
N. coucang: in Indonesia an estimate of 1.14 'Mio.' [million] individuals was made, based on suitable habitat but it is thought that the current population must be much smaller. It has been described as 'insufficiently known' in Sarawak; considered to be endangered in Peninsular Malaysia in 1987; and as endangered in Singapore. It has been described as 'very limited' in the Philippines. For ***N. coucang*** there was an estimated forest loss of 57% by the 1980s in Indonesia and this trend has continued. In Peninsular Malaysia 94% of the habitat for this species has apparently been destroyed and in the Philippines the habitat has been reduced by 77%. Almost no natural habitat for lorises remains in Java and widespread logging is seriously affecting habitat in Sumatra. There has been a serious decline of ***N. c. javanicus*** with presence of this species in trade being increasingly replaced by subspecies from Sumatra and Kalimantan. See Section A above for details of ongoing and inferred population declines for *N. bengalensis* and *N. pygmaeus*.	N. coucang: *there is no mention of the situation in Brunei Darussalam, Indonesia (Kalimantan), Malaysia (Sabah, Sarawak) and Thailand (peninsular) where, in the absence of data, it is difficult to infer a decline. Exploitation further impacts upon the species.* N coucang: *Once thought to be extinct in Singapore, but now seen occasionally, it is not clear if current populations of these animals are native or result from escapes from the zoo (Nekaris, 2007*).
Trade criteria for inclusion in Appendix I	
The species is or may be affected by trade	
	Schulze (2003) documented cases of international trade to China, United Arab Emirates, Israel, Kuwait, UK, Japan and Australia in addition to many cases of domestic trade in Nycticebus *in Indonesia, Vietnam, Cambodia and India.*
The recent legal international trade is summarised in table form, based on CITES reported trade from 1977–2004. Gross trade, including all terms, of 1 678 *N. coucang* (including *N. bengalensis*) and 131 *N. pygmaeus* was reported for the period 1977–2004. The exporting countries are not discussed in the text; the main importing countries for *N. coucang* are given as Singapore, Lao PDR, Hong Kong, Cambodia and Thailand, but the importing countries for *N. pygmaeus* are not mentioned. It is reported that Japanese pet shops have offered *Nycticebus* for sale, and it is claimed that 'CITES trade data only record a few dozen specimens to be imported'.	*The trade data from the CITES Trade Database are not divided by years, which conceals the fact that reported trade has decreased substantially in recent years, and it is not possible to determine the main exporters or importers, the number of individuals involved (all terms are combined, including scientific specimens which may involve large numbers of tiny samples), or the number of captive-bred animals involved. The SS has combined individuals with body parts recorded in grams resulting in artificially high figures.* *Contrary to the SS, the CITES Trade Database indicates that Japan reported imports of 635* N. coucang *specimens from 1985–1999.*
***N. bengalensis*:** illegal trade, some of it apparently extensive, has been reported from the following range States: Cambodia to Lao PDR, Thailand and Vietnam; from India to Bangladesh and Myanmar; from Lao PDR to China and Vietnam; and from Myanmar to China. The only quantitative report refers to one vendor in Cambodia, who reported he sold 10 *Nycticebus* per month to Chinese medicine traders. ***N. coucang*:** illegal trade has been reported from the following range States: Indonesia to Japan, Kuwait,	*According to data from the CITES Trade Database, from 1977–2005, a total of 972 wild (*including I or unspecified)* Nycticebus *specimens (including live individuals and bodies, skins, skulls) were reported. The majority (88.5%) of trade was reported as* N.coucang *(which includes* N. bengalensis*) with 10.5% reported as* N.pygmaeus*. Most trade was in live specimens. The largest proportion of trade originated in Lao PDR (see Table 1) much of which was imported by Singapore for re-export. In addition there has been limited trade in body parts.*

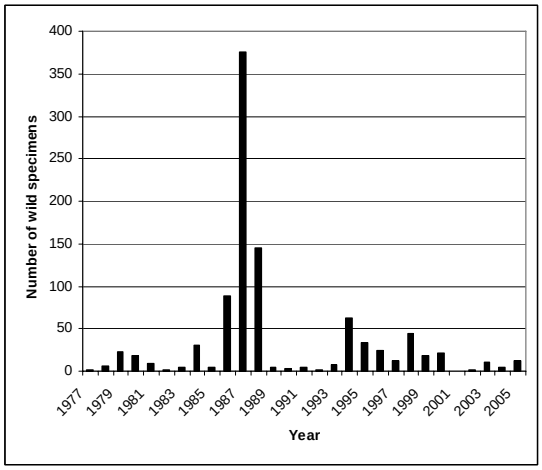
Supporting Statement (SS)

Malaysia, Singapore and Thailand; from Thailand to Lao PDR. The only quantified report was of 117 individuals confiscated in Jakarta in 2003.

***N. pygmaeus*:** illegal trade has been reported from the following range States: Cambodia to China, Lao PDR, Thailand and Vietnam; Vietnam to China and Taiwan. Quantitative reports include 80–90 specimens imported annually to China from Vietnam from 1998–1999, and 102 from Vietnam in 1993, which were confiscated in Taiwan.

Additional information

Numbers of exported specimens of wild* Nycticebus spp. from range States excluding re-exports.



CITES Trade Database 2007

% of total* Nycticebus coucang *wild* exports (excluding re-export) between 1977–2005

Exporting country	*Percentage*
Lao DPR	*56.0*
Thailand	*12.0*
Singapore	*9.3*
Malaysia	*7.9*
Cambodia	*6.0*
Hong Kong	*2.4*
China	*0.7*
Indonesia	*0.6*
Vietnam	*0.5*
Philippines	*0.2*
XX	*2.0*

Of the 102 specimens of N. pygmaeus, *37 originated from Vietnam, 29 from Sweden (with no source code recorded) and 12 from Lao PDR.*

The CITES Trade Database also indicates some re-export of Nycticebus *from range States, including Indonesia, Cambodia, Lao PDR and Thailand, often without a recorded country of origin. The majority of exports recorded from Singapore were re-exports originating in Lao PDR.*

The main nations importing Nycticebus *were Japan, Singapore, Australia and the USA, with smaller quantities imported to Denmark, Italy, Czech Republic, Russian Federation, the former Soviet Union, Norway and Hungary.*

From 1977–2005 a total of 188 F1 or captive-bred Nycticebus *spp. were exported, the majority of which were from China, Cambodia, Sweden, the USA and Philippines.*

Between 1999 and 2007, there have been seven reported cases (totalling 130 specimens) of seizures of Nycticebus *that were illegally imported to Japan from Thailand (Kanari, 2006). Seizures of Illegally possessed* Nycticebus *have been reported in UK (Anon, 2002), USA (Sweetingham, 2006), Singapore (Agri-Food and Veterinary Authority of Singapore, 2004), Hong Kong (Anon, 1999) and there is trans-frontier trade reported in Yunnan, China (Zhijun* et al.*, 1996).*

Supporting Statement (SS)	Additional information

Other information

Threats

Deforestation, hunting and trapping for the pet trade, food and traditional medicine are the main threats. There is apparently extensive, but largely unquantified, domestic use for pets, food and traditional medicine in Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Singapore, Thailand and Vietnam.

Large-scale deforestation has undoubtedly reduced habitat for Nycticebus *species. However, Long (2007) notes that the genus is adaptable to, and may even prefer, disturbed forest. Moreover, the genus can probably survive with viable sub-populations in small forest fragments.*

In Lao PDR, at least, lorises are apparently not favoured as food, although some people are not averse to eating them (Duckworth et al., *1999).*

Nycticebus *are easily captured because they are nocturnal and do not flee. When trees are cut, or when forests are cleared, the lorises can be easily gathered and brought into the trade (Schulze and Groves, 2004; Nekaris and Bearder, 2007).*

A total of 692 (illegal) N. coucang *were recorded in monthly surveys of the three wildlife markets in Medan (Indonesia) between January 1997 and December 2001 (Shepherd* et al*., 2004).*

Conservation, management and legislation

N. bengalensis is protected in Cambodia but despite prohibition of catching 'rare tree species' or hunting 'rare and endangered wildlife species', a limited capture is allowed for traditional medicine. This species is also protected in China, Vietnam (where commercial trade is prohibited), and in India (where it is listed under Schedule I of the Wildlife Act, 1972). All species are currently listed in CITES Appendix II.

N. coucang is protected in Indonesia by Decree No. 66 of 1973 of the Ministry of Agriculture and Gov. Reg. No. 7 of 1999 concerning the Protection of Wild Fauna and Flora, Act No. 5 of 1999. In Peninsular Malaysia *N. coucang* is listed in Schedule I of totally protected wild animals.

In Cambodia, China and Vietnam, hunting, capture and, in the latter two cases, also possession and storage of *N. pygmaeus*, are illegal. However enforcement is poor and penalties are low and have no deterring effect. In Vietnam all exploitation and use of *N. pygmaeus* are illegal and confiscated specimens are regularly donated to the Endangered Primate Rescue Centre in Cuc Phuong National Park (51 individuals in last two decades), with the aim of reintroducing them to the wild.

Since October 2001 the European Union has prohibited imports of *N. pygmaeus* from Cambodia and Lao PDR.

Nycticebus species have been recorded in protected areas in Bangladesh, China, India, Indonesia, Lao PDR, Peninsular Malaysia, Thailand and Vietnam. Daweishan, Fenshuiling and Huanglianshan Reserves in Yunnan have 80% of the Chinese population of *Nycticebus pygmaeus* within their boundaries, but the species is still being caught in these areas.

N. bengalensis *is also protected in Bangladesh and* N. coucang/N. bengalensis *in Thailand (Streicher, 2004).*

Nycticebus *species are fully protected from trade in Peninsular Malaysia, Singapore, Philippines, Vietnam, Cambodia, China, India and Thailand. In Myanmar they can be hunted under licence and in Lao PDR they are unprotected (B. Long* et al., in litt.*).*

N. pygmaeus *is protected in Vietnam at the highest possible level; in China, it is listed as Class 1 protected (involving potentially severe penalties); and in Cambodia it is listed on the Ministry of Forestry and Fisheries Species List with a hunting prohibition from 08 January 1994.*

Supporting Statement (SS)	Additional information
Similar species	
N. bengalensis and *N. coucang* are difficult to distinguish and, in international shipments, non-specialists may confuse *Nycticebus* spp. with other prosimians and even *Lepilemur* spp.	
Captive breeding	
Over 107 *N. coucang* and 175 *N. pygmaeus* live in captive breeding facilities.	*Following up the citation it is apparent that these are world-wide figures of animals in captivity at recognised captive-breeding facilities. There is no indication of how many* Nycticebus *have been bred in captivity – the numbers reported in international trade are given above.*
Other comments	
It is claimed that 'An Appendix-I listing would not only result in higher fines and stronger international efforts, but also increase both public awareness and national conservation measures.'	*The status of lorises was reviewed at a workshop held by the IUCN/SSC Primate Specialist Group in Phnom Penh in September 2006. New Red List categories for various species have been proposed (Nekaris, 2007).*

Reviewers:
B. Long, K.A.L. Nekaris, TRAFFIC Southeast Asia.

Deletion of Bobcat *Lynx rufus* from Appendix II.

Proponent: The United States of America.

Summary: The Bobcat *Lynx rufus* is a medium-sized, spotted cat. It is the most widely distributed native felid in North America, ranging from British Columbia, Canada to Oaxaca, Mexico. It is one of four currently recognised members of the genus *Lynx*, the others being the American Lynx *Lynx canadensis,* the Eurasian Lynx *Lynx lynx* and the Iberian Lynx *Lynx pardinus.* In 1981 a population of 725 000 to 1 017 000 Bobcats was estimated in the USA and this is likely to have increased during the past decade. No population figure is available for Canada, but the Bobcat is not considered threatened. A population assessment of the Bobcat in Mexico should be completed in 2007; anecdotal reports suggest it is relatively abundant in many areas. The Bobcat is currently classified as Least Concern (assessed 2002) in the IUCN Red List of Threatened Species.

Management programmes in the USA and Canada are considered the most advanced for commercial exploitation of feline furbearers and to result in sustainable harvests. The species was included in the general listing of the family Felidae in Appendix II in 1977. In 1983, the Parties agreed not to remove it from Appendix II for reasons of similarity of appearance to other spotted cats that were deemed threatened by trade. A proposal to delete *L. rufus* from Appendix II was considered again at CoP 13. As there were still concerns by some Parties about potential look-alike problems, it was agreed that the Animals Committee would carry out a review focussing on the *Lynx* complex to determine whether these species are actually confused in trade or whether look-alike problems are hypothetical. A subsequent TRAFFIC North America study found that, in the opinion of fur industry experts, distinguishing *L. rufus* parts, pieces and derivatives from those of *L. canadensis* (which shares part of its range with *L. rufus)* is not difficult, and can be accomplished with limited experience and/or training. However this study did not consider trade in Eurasian felid species and/or the risk of Eurasian cat species entering the trade by being misidentified as *L. rufus.* The study did not examine the ease or difficulty in distinguishing *L. rufus* from other genera of cats, or what level of identification training Customs and wildlife enforcement officers of all of the CITES Parties would require if *L. rufus* were removed from Appendix II. The possibility of confusing *L. rufus* pelts with skins from a number of Latin American spotted cat species had also not been considered. A consultation with the US National Fish and Wildlife Forensics Laboratory revealed that pieces of Bobcat skins cannot be distinguished from other *Lynx* species. However these were a relatively minor part of *Lynx* species trade between 1980 and 2004 when 78% of traded items consisted of whole skins. During the same period, the USA was by far the biggest exporter of *L. rufus* items (exporting or re-exporting 82% of items), followed by Canada (13%) and the remaining 5% by other countries, including less than 0.05% that were exported or re-exported by Mexico. During this period the *documented* volume of illegal trade in *Lynx* spp. was only 0.2% of total trade. This low figure suggests the illegal trade in *Lynx* spp. is not a major problem, although it is not possible to determine how representative these data are of the actual total global illegal trade. The legal and illegal trade in *Lynx* spp. was dominated by *L. rufus* between 1980 and 2004. A recent TRAFFIC North America survey of the fur industry found that international, European and Asian markets seem to prefer *L. rufus* and *L. canadensis* over other *Lynx* species. The proponent points out that the ready availability of legally acquired *L. rufus* in markets is a safeguard against the illegal take and trade of other *Lynx* species. In addition the USA survey of range countries for the Review of the Appendices by the Animals Committee showed that trade in *L. lynx* and *L. pardinus* is well controlled. The legal trade in *L. rufus* skins steadily increased between 1998 and 2004 suggesting there is a growing market for products made from the species. The fur industry survey showed that at the wholesale/manufacturing level, the demand for *L. rufus* has increased over the past five years. This survey also revealed that if *L. rufus* were de-listed, fur industry experts thought the demand and price of its fur might increase or remain the same.

The proponent seeks to delete *Lynx rufus* from Appendix II as neither domestic nor international trade threaten the species, it is very well managed, harvest and trade are well regulated, and inclusion of the species in Appendix II due to similarity of appearance to other felids is no longer warranted.

Analysis: The Bobcat is a widespread species with a large global population, currently classified as Least Concern by IUCN. There is considerable trade in Bobact fur, but management programmes in the two main range States are believed to result in sustainable harvests. It therefore appears unlikely that deletion from Appendix II will result in the species qualifying for inclusion in the Appendices under Annex 2 a of Resolution Conf. 9.24 (Rev CoP13) in the near future.

However there are still potential look-alike problems with some Eurasian and Latin American cat species, particularly other members of the genus *Lynx,* including *Lynx pardinus,* listed in Appendix I, which have not been considered by studies so far. In particular pieces of *L. rufus* skins cannot be distinguished from other

Lynx species. Although whole skins form the major part of trade items, the second most common items legally traded are skin pieces or scraps. *L. rufus* therefore appears to meet Criterion A of Annex 2 b of Resolution Conf. 9.24 (Rev. CoP13), which provides for inclusion in Appendix II for look-alike reasons.

Supporting Statement (SS)	Additional information
Taxonomy	
Range	
Canada, Mexico and USA.	
IUCN Global Category	
Not listed in 2003 IUCN Red List of Threatened Species.	*Least Concern (Assessed 2002, Criteria version 3.1)*

Biological and trade criteria for retention in Appendix II (Res. Conf. 9.24 (Rev. CoP13) Annex 2 a)

A) Trade regulation needed to prevent future inclusion in Appendix I

B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

Lynx rufus was included in Appendix II in 1977 along with all Felidae species that had not already been listed. In 1983 it was agreed by the CoP that its continued listing was based solely on Article II, paragraph 2(b) to ensure effective control of trade in other felids. Monitoring of wild *L. rufus* populations since 1977 continues to show that the species is not threatened, and that harvest and trade are well regulated.	
In 1981 it was estimated there were 725 000 to 1 017 000 Bobcats in the USA. Geographic expansion of range and increases in density during the past decade suggest that population size has likely increased since then. In Canada the status of the Bobcat is considered secure i.e. relatively widespread or abundant. Anecdotal reports suggest that Bobcats are relatively abundant in many areas of Mexico and can be found in developed areas. A population assessment in Mexico will be completed in 2007 and data may be available at CoP 14.	*Bobcats can occur at high densities of up to 38 resident adults per 25 km^2. Reduced density is associated with harsher environments such as south-western deserts and the more northern parts of the Bobcat's range (Nowell and Jackson, 1996).*
In the USA, harvesting levels have varied due to changes in pelt value and fur harvest intensity for other species. Hunting is regulated at the State level on the basis of adaptive management programmes. Managers generally consider 20% of the population per annum to be the maximum sustainable harvest rate.	
In Canada, Bobcats are legally harvested in seven provinces resulting in 1 500 to 2 000 pelts per year, the majority from Nova Scotia (65–70%). The Canadian harvest is almost exclusively for pelt collection for the fur trade. There is also a small amount of trade in other Bobcat parts. The harvest is controlled by provincial regulation in Canada. There is a four-month harvest season. Quotas are in place in three provinces, based on harvest statistics and prey abundance surveys. Canadian protections for the Bobcat under provincial/territorial wildlife acts would remain in place if the species was de-listed from CITES, as they are not dependent on listing in the CITES Appendices. Canada is confident that current practices guard against potential threats from trade demand, and that the Bobcat in Canada is not impacted adversely by trade.	*A TRAFFIC North America survey of the fur industry found that at the wholesale/manufacturing level, over the past five years, the demand for* L. rufus *has increased. At the retail level in North America, the demand varies. The demand for one* Lynx *species probably does influence the demand for another (Cooper and Shadbolt, 2007).*

Supporting Statement (SS)	Additional information
In Mexico, Bobcats are primarily harvested as game, and exports are mainly trophies. The harvest is regulated nationally. It must be demonstrated that harvest rates are less than the natural renewal rate of the wild population affected.	*In Mexico there is no large-scale commercial fur harvest of* L. rufus*. Hunting of* L. rufus *is allowed and each year the Secretaria do Medio Ambiente y Recursos Naturales (SEMARNAT) issues a number of hunting permits for the species; 17 permits were issued in 2005. Some delegations of SEMARNAT are decentralised and can therefore issue hunting permits for* L. rufus *without informing the Procuraduria Federal de Proteccion al Ambiente. This is possible because* L. rufus *is not listed in the Mexican list of species that are legally protected in the country (Cooper and Shadbolt, 2007).*
Between 1980 and 2004, approximately 1 424 960 *Lynx* spp. items were legally traded, of which 78% were skins, according to data in the UNEP-WCMC CITES Trade Database. 62% of all legally traded items and 67% of legally traded skins were of *L. rufus.* The USA exported or re-exported 82% of *L. rufus* items, Canada 13%, and the remaining 5% were exported or re-exported by other countries including Mexico (less than 0.05%). Legal trade in *L. rufus* items includes bodies, carvings, claws, feet, hair, garments, leather items, plates etc; however skins account for 83% of items.	*The legal and illegal trade in* Lynx *was dominated* by L. rufus *during the period 1980–2004. The numbers* of L. rufus *skins legally traded declined between 1987 and 1998, but have steadily increased between 1998 and 2004. This recent increase in the number of* L. rufus *skins traded, suggests that there is a growing market for products made from the species. Any change to the CITES listing of* L. rufus *could be expected to have a significant impact on this market (Cooper and Shadbolt, 2007).*
Between 1980 and 2004, a total of 3 568 *Lynx* spp. items were recorded as illegal, based on the CITES Trade Database. This is an average of only 143 items per year, and represents only 0.2% of the total (legal and illegal) trade during the period. Of these illegal items, 87% were of *L. rufus.* 85% of illegal items were skins and 93% of the skins were of *L. rufus.* This small volume of illegally traded *Lynx* spp. items does not suggest a major problem with illegal trade in *Lynx* spp.	*While the documented volume of illegally traded* L. rufus *does not suggest there is a major problem with illegal trade in* Lynx*, the data should be considered only a crude snapshot of illegal trade in* Lynx*, and not a summary of all illegal trade in the genus. It is not possible to determine how representative these data are of the actual total global illegal trade in* Lynx *due to the unregulated and unrecorded nature of illegal trade (Cooper and Shadbolt, 2007).*
	The TRAFFIC North America fur industry survey also found that if L. rufus *was de-listed, the demand and price of its fur might increase or remain the same, but not decrease (Cooper and Shadbolt, 2007).*
The proponent notes that a survey of North American and European fur industry representatives that deal with *Lynx* spp. carried out by TRAFFIC North America suggested that international, European and Asian markets all seem to prefer both *L. rufus* and *L. canadensis* over other *Lynx* species*.* The proponent points out that the ready availability of legally acquired *L. rufus* in the market is a safeguard to the illegal take and trade of other *Lynx* species. The survey of range countries, conducted by the USA for the Review of the Appendices by the Animals Committee, as well as the trade data show that trade in *L. lynx* and *L. pardinus* is well controlled, especially by range countries.	*The results of the TRAFFIC North America study cannot be used to predict whether the illegal trade in* Lynx *or any other cat species, will increase if* L. rufus *is removed from the CITES Appendices. However, removal could be expected to have a significant impact on the global fur trade due to the reduced permitting requirements and on the associated workload for permit issuing authorities.*
	The easing of restrictions on trade in L. rufus *could be an incentive for increased trade while also removing the need for exporting countries to complete CITES non-detriment findings. De-listing* L. rufus *from CITES could therefore impact the conservation of the species unless all range states have scientifically sound, enforceable and actively enforced management plans for the species (Cooper and Shadbolt, 2007).*

Supporting Statement (SS)	Additional information

Retention in Appendix II to improve control of other listed species

A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP13) Annex 2 a or listed in Appendix I

In 1983 it was agreed by the CoP that its continued listing was based solely on Article II, paragraph 2(b) to ensure effective control of trade in other felids. Several species have been identified as similar in appearance to Bobcat, including the *Lynx canadensis*, *L. pardinus* and *L. lynx*. Characteristics of the pelage and skull can be used to clearly distinguish *L. rufus* from other members of the genus *Lynx.*

The proponent notes that a TRAFFIC North America study into the CITES-reported illegal trade in *Lynx* species found that in the opinion of fur industry representatives, distinguishing *L. rufus* parts, pieces and derivatives from those of *L. canadensis* is not difficult, and can be accomplished with limited experience and/or training.

The Division of Scientific Authority's consultation with the USFWS National Fish and Wildlife Forensics Laboratory revealed that pieces of Bobcat skins cannot be distinguished from those of the other *Lynx* species. However data held in the UNEP-WCMC Trade Database from 1980–2004 show that the majority (78%) of trade in *Lynx* species consists of skins. Since skins are almost always auctioned as dry skins with fur out and are almost always complete, including the ears and tail, the skins should not present a look-alike problem because the Bobcat can be reliably distinguished from other *Lynx* species by the ears and tail.

CITES taxonomy currently recognises four members of the genus Lynx: L. canadensis, L. lynx, L. pardinus and L. rufus. Lynx pardinus, considered to be Critically Endangered (IUCN, 2006) occurs in Portugal and Spain and was transferred to Appendix I in 1990. All other species are in Appendix II. Lynx lynx is widespread in Eurasia, occurring in around 50 range States. It is classified as Near Threatened (assessed 2002) by IUCN.

The TRAFFIC North America report states that their study does not provide a complete global picture of the use of the genus Lynx*. In particular, there was no consideration of the trade in the Eurasian species of the genus e.g. for the production of Lynx fur plates. NB a plate is a term used in the manufacturing end of the fur trade, skins are made into 'plates' which are sold to high-end manufacturers and designers, see Cooper and Shadbolt (2007).*

In addition no consideration was given to the risk of Asian cat species or Lynx pardinus *entering trade by being misidentified as* L. rufus*. It did not examine the ease or difficulty in distinguishing* L. rufus *from other genera of cats, or what level of identification training Customs and wildlife enforcement officers of all of the CITES Parties would require if* L. rufus *was de-listed from Appendix II (keeping in mind they would need to be able to distinguish* L. rufus *from all other cat species). These aspects were outside the remit of the TRAFFIC North America report (Cooper and Shadbolt, 2007).*

In comments on the proposal to remove L. rufus *from the Appendices presented to CoP 13, Ray (2004) considered that arguably the pelt of* L. rufus *could be confused with the skins from a number of Latin American spotted cat species.*

The view has been expressed that removal of Bobcat from the Appendices could potentially increase poaching and illegal trade in the fur of protected small cat species, such as the Margay Leopardus wiedii *and Ocelot* Leopardus pardalis *as their fur would be difficult to distinguish from Bobcat fur (Anon, 2006).*

Other information

Threats

Loss of habitat to urbanisation is the current threat to populations in the USA.

There are no widespread acute threats to the species in Canada. Some possible threats include decline in prey populations, habitat loss and alteration, and climate change.

Conservation, management and legislation

Bobcat management programmes in the USA and Canada are the most advanced for commercial exploitation of feline furbearers. The management programmes ensure long-term sustainable use of the

Nowell and Jackson (1996) considered that it is probably safe to say that current North American management practices have resulted in sustainable harvests in that they have been sufficient to prevent

Supporting Statement (SS)	Additional information
species and support its conservation. In the USA, Bobcats are classified as game or furbearers and are subsequently harvested through regulation in 38 States. The species is further protected by continuous closed hunting seasons in nine States. It is classified as a State endangered species and thus fully protected in Indiana, Ohio, New Jersey and Iowa, and classified and protected as a State threatened species in Illinois. Four states use statewide harvest quotas to limit the annual harvest. States periodically review species harvest programmes to account for new findings and current advice from experts in their region. Sustainable harvest rates are most often determined by using population models or life table analyses based on population demographic data collected annually from harvested samples. Managers generally consider 20% of the population per annum to be the maximum sustainable harvest rate. Age structure analyses, such as adult-to-yearling ratios have been developed to estimate changes in harvest rates over time. In Canada, the Bobcat is legally protected through various provincial and territorial wildlife acts, under which certain wildlife uses are allowed under specific regulations and only with the provision of licenses or permits. Generally without such a license, the catch, possession, trade, disturbance or destruction of wildlife is prohibited. Mandatory trapper education and mandatory reporting of all take (intended or incidental) is a condition of licensing. The Bobcat is classified as a furbearer and is managed regionally by the provinces and territories. It is harvested in seven out of eight range provinces under provincial regulation; harvest is prohibited in Quebec. The harvest season ranges from 1 November to the end of February. Quotas are in place in British Columbia, New Brunswick and Nova Scotia and are set based on harvest statistics and prey abundance surveys. In Mexico, Bobcat harvest is regulated by the General Law of Wildlife and the General Law of Ecological Balance and Environmental Protection. Both establish that prior to harvesting, it must be demonstrated that harvest rates are less than the natural renewal rate of the wild population affected. In general the harvest rate is about one specimen per four thousand hectares. **Population monitoring** Population size is difficult to estimate due to the Bobcat's cryptic and mainly nocturnal behaviour. Indices are used to monitor populations in the USA and Canada including data on vehicle-caused mortalities, hunter and trapper questionnaires, hunter sightings, and winter track counts. Scent station surveys are used to monitor populations in Mexico.	*widespread and prolonged overharvest. Under such a management regime, the long-term viability [of Bobcat] is unlikely to be impaired, and the commercial use of Bobcat can thus be considered sustainable.*
<u>Captive breeding</u> In the USA, some States allow and regulate captive breeding Bobcats for commercial purposes, but the current international pelt trade is dominated by wild fur harvests.	

Reviewers:
C.Breitenmoser, U.Breitenmoser, K. Nowell, TRAFFIC North America

Transfer of the population of Leopard *Panthera pardus* in Uganda from Appendix I to Appendix II.

with an annotation that reads:

1) For the exclusive purpose of sport hunting for trophies and skins for personal use, to be exported as personal effects; and

2) With an export quota of 50 Leopards for the whole country.

Proponent: Uganda.

Summary: The Leopard *Panthera pardus* occurs widely in Asia, the Middle East and Africa, including Uganda. The species as a whole is currently classified as Least Concern by IUCN (assessed 2002).

An up-to-date Leopard population estimate and trend in population are not available for Uganda. In 1987 the population in Uganda was estimated at 4 292 (range 2 361–7 854, 95% confidence limits), based on a model relating Leopard densities to habitat extent and rainfall, applied across sub-Saharan Africa. This model is now believed to have overestimated Leopard densities in some cases, particularly in tropical moist forests, which comprise at least a portion of Leopard habitat in Uganda. The species is said still to occur widely in Uganda, but recent camera-trap surveys failed to find evidence of Leopards in a number of forested sites still officially considered to be Leopard habitat. Although the Leopard can thrive in altered natural habitats, conversion of wild lands for agriculture has brought the species into escalating conflict with people and, in general, population densities outside protected areas are much lower than those within. Agriculture has also fragmented Leopard habitats. Within Uganda, threats to Leopards increased in 2000 when the government launched a Plan for the Modernisation of Agriculture to convert current subsistence farming (on which 80% of Ugandans depend) to commercial agriculture. Recently, further Government plans were announced to degazette some protected rainforests for commercial agriculture. If implemented, these would be likely to reduce further the suitability of Leopard habitats and possibly bring Leopards into increased conflict with people. The quota of 50 Leopards a year that is proposed for Uganda is intended as a precautionary combined animal control and sport hunting based figure. The aim is to generate economic benefits that would motivate communities, game ranchers and local governments to protect Leopards instead of treating them as vermin.

The proponents consider that sport hunting would add a sufficiently high economic value to the Leopard to change the attitudes of rural people who currently regard it as a threat to their livelihoods. They note that in Uganda all wildlife utilisation, including sport hunting, is subject to licensing laws, with legislative measures in place to allow for penalisation of anyone engaged in illegal wildlife trade. They state that skin exports would be controlled by tagging and that the Uganda Wildlife Authority is able to determine trends in exploitation, carry out non-detriment findings and can respond in time if monitoring of Leopards reveals that sport hunting is detrimental to the species' survival in the wild. However, it has been suggested that there is currently insufficient information to determine a sustainable off-take of Leopards in Uganda and that it is possible that an annual quota of 50 may be too high.

The Leopard has been included in CITES Appendix I since 1975. Since CoP 4, a system has been in place for exporting Leopards under quota from some other African countries for primarily non-commercial purposes. At present such exports are under Resolution Conf. 10.14 (Rev. CoP 13) (Quotas for Leopard hunting trophies and skins for personal use). Countries concerned and their quotas are: Botswana (130); Central African Republic (40); Ethiopia (500); Kenya (80); Malawi (50); Mozambique (60); Namibia (250); South Africa (150); United Republic of Tanzania (500); Zambia (300); Zimbabwe (500). CITES trade data indicate that in the past few years these countries have generally exported considerably fewer specimens than allowed for in their quotas.

Uganda seeks to transfer its population of Leopard from Appendix I to Appendix II subject to an annual quota of 50 animals obtained from sport hunting, for trophies and skins for personal use to be exported as personal effects.

Analysis: To be transferred to Appendix II the Ugandan population of the Leopard should no longer meet the criteria for inclusion in Appendix I set out in Resolution Conf. 9.24 (Rev. CoP.13). Although its range may have contracted in Uganda, it does not appear to have a restricted area of distribution. There is no quantitative information on current trends in Leopard numbers in Uganda. The population is inferred to have declined through decreasing availability of habitat and prey and increased mortality as a result of

conflicts with humans although it is not clear that any rate of decline would be within the general guidelines suggested in Resolution Conf. 9.24 (Rev. CoP.13) (50% within three generations or ten years, whichever is the longest). However, it is possible that the Leopard in Uganda has a small population according to the guidelines in Resolution Conf. 9.24 (Rev. CoP.13) (5 000 or fewer) and that this population is declining. The Ugandan population of Leopard may therefore still meet the criteria for inclusion in Appendix I.

The proposed export quota is considered by the proponents to be precautionary, but no basis for its derivation is provided.

Annex 3 of Resolution Conf. 9.24 (Rev. CoP 13) states that listing of species in more than one Appendix should be avoided in general. When split-listing does occur, this should generally be on the basis of national or continental populations, rather than subspecies.

It appears that retaining the Ugandan population of the Leopard in Appendix I and applying for an export quota under Resolution Conf.10.14 (Rev. CoP.13) or any successor would essentially have the same effect as the present proposal. Such an approach would be consistent with current treatment of national populations of eleven other Leopard range States.

Supporting Statement (SS)	Additional information
Taxonomy	
Range	
Uganda.	*The species as a whole is widespread in Africa and Asia. UNEP-WCMC Species Database lists 74 range States and six possible range States.*
IUCN Global Category	
	Least Concern (Assessed in 2002, Criteria version 3.1).

Biological criteria for inclusion in Appendix 1

A) Small wild population **(i) Population or habitat decline; (ii) small sub-populations; (iii) one sub-population; (iv) large population fluctuations; (v) high vulnerability**	
The Leopard's secretive habits and wide-ranging distribution make it difficult to establish the actual population. A total of 27–36 individuals has been estimated in Lake Mburo National Park (370 km^2) and the population in some other national parks is thought to be higher (no reference). Further survey work is being carried out.	*In 1987 the population in Uganda was estimated at 4 292 (range 2 361-7 854, 95% confidence limits), based on a model relating Leopard densities to habitat extent and rainfall, applied across sub-Saharan Africa (Martin and de Meulenaer, 1988). This model is now believed to have overestimated Leopard densities in some cases, particularly in tropical moist forests (Jackson, 1989; Marker and Dickman, 2005), which comprise at least a portion of Leopard habitat in Uganda.* *Hunter (2007) questions the estimate of 27–36 animals in Lake Mburo National Park given in the proposal.* *The Leopard appears to be very successful in adapting to altered natural habitats and settled environments in the absence of intense persecution. However Leopard densities in these human-modified habitats are very likely to be reduced because of persecution (IUCN/SSC Cat Specialist Group, 1996). Marker and Dickman (2005) looked at six studies and found that mean density of Leopards within protected areas was considerably higher than that outside.*

Supporting Statement (SS)	Additional information
B) Restricted area of distribution **(i) Fragmented or localised population; (ii) large fluctuations in distribution or sub-populations; (iii) high vulnerability; (iv) decrease in distribution, population, area or quality of habitat, or recruitment**	
The Leopard occurs widely in Uganda, in all Uganda's forested and savannah wildlife protected areas and habitats within the "cattle corridor" region; in addition to other savannah areas of the north, north-west and south. Leopard habitat has been fragmented due to the establishment of modern livestock farms and crop cultivation.	*There is little distribution data for Uganda. Camera-trap surveys conducted recently by the Wildlife Conservation Society in Uganda have failed to find evidence of Leopards in a number of forested sites (Rwenzori Mountains, Bwindi Impenetrable, and Kibale National Parks and Kasyoha-Kitomi and Kalinzu Forest reserves) still considered to be Leopard habitat by the government. Although there are no national figures available, it is almost certainly the case that Leopards have been extirpated from substantial areas in Uganda considered popularly or officially still to be Leopard habitat (Hunter, 2007).*
C) Decline in number of wild individuals **(i) Ongoing or historic decline; (ii) inferred or projected decline**	
	No information was located on trends in the numbers of wild Leopards in Uganda.
Trade criteria for inclusion in Appendix I	
The species is or may be affected by trade	
	The Leopard has been included in Appendix I since 1975. Since CoP 4 a system has been in place for exporting Leopards under quota from some other African countries for primarily non-commercial purposes. At present such exports are under Resolution Conf. 10.14 (Rev. CoP 13) (Quotas for Leopard hunting trophies and skins for personal use). Countries concerned and their quotas are: Botswana (130); Central African Republic (40); Ethiopia (500); Kenya (80); Malawi (50); Mozambique (60); Namibia (250); South Africa (150); United Republic of Tanzania (500); Zambia (300); Zimbabwe (500). CITES trade data indicate that in the past few years these countries have generally exported considerably fewer specimens than allowed for in their quotas (around 1 700 in total were recorded in trade in 2005, out of a possible total of 2 560. *Under Resolution Conf. 10.14 (Rev. CoP 13), import permits can only be granted if the specimens of Appendix-I species with approved quotas are not to be used for primarily commercial purposes. Export permits can only be granted when a Scientific Authority of the state of export has advised that such an export would not be detrimental to the survival of the species.*
Precautionary measures	
CoP satisfied with: Annex 4, Res. Conf. 9.2 (Rev. CoP 13) Para A 2 c: An integral part of the amendment proposal is an export quota or other special measure approved by the Conference of the Parties, based on management measures described in the supporting statement of the amendment proposal, provided that effective enforcement controls are in place);	
The proposed quota of 50 Leopards a year is a precautionary combined animal control and sport hunting based figure and intended as a management mitigation intervention. The quota figure will be subject to review, both in Uganda and at the next CoP depending on the outcome of this proposal. The management of the quota will be in accordance with	*Hunter (2007) notes that the supporting statement of the proposal argues that determining Leopard numbers is too lengthy, difficult and costly to establish, but asserts that these can be established with camera-trapping.*

Supporting Statement (SS)	Additional information
Resolution Conf. 10.14 and Article 3 (a-c) of the Convention. Skin exports will be monitored by tagging in Uganda. Sport hunting in Uganda is based on a strict code of conduct. Management of the pilot sport hunting project around Lake Mburo National Park is based on a formal M.O.U. between the Uganda Wildlife Authority, local governments and local communities, and Game Trails (U) Ltd, a professional private hunting company. It is intended that this institutional framework be replicated and/or made available for Leopard hunting. There are effective legislation measures to penalise anyone engaged in illegal hunting of and/or trade in game. All wildlife utilisation, including sport hunting, is subject to licensing laws. The Uganda Wildlife Authority (UWA) has a Management Information System and is able to determine trends in exploitation, carry out non-detriment findings and respond in time if monitoring of Leopard sport hunting reveals that it is detrimental to the species' survival in the wild. Operational procedures for application and approval of wildlife use (including sport hunting) and procedures for monitoring/inspection of export or import wildlife consignments are all in place now. The key challenge to African governments is to add a sufficiently high economic value to the Leopard quickly enough to change the attitudes of rural people whose livelihoods are threatened by it.	

Other information

Threats

Conflict with livestock farmers is the major threat to the survival of the Leopard in Uganda. Local communities have a negative attitude towards the Leopard. At the present time, problem Leopards in Uganda that kill livestock are in turn killed by local communities. The reports of damage by Leopards involving livestock are increasing and are widespread. Around 80% of Ugandans depend on subsistence agriculture. In an attempt to address increased levels of poverty in rural areas, the Government is encouraging agricultural production. This has created demand for more land and is infringing on Leopard habitats.	*Ray* et al. *(2005) note that loss of habitat and subsequent impacts on prey remain among the chief threats to the Leopard in Africa. Increasing habitat loss is associated with elevated conflict between Leopards and the interests of local people. This drives direct persecution which may lead to elimination of isolated populations.* *The Plan for Modernisation of Agriculture (PMA) was launched in Uganda in December 2000. The PMA aims to change current subsistence agriculture to commercial agriculture (PMA Secretariat, 2001). In December 2006 the Ugandan Government has proposed two large agricultural schemes, one in an important protected rainforest, and another in a forest that buffers Lake Victoria, for palm oil plantations and sugar cane (Anon., 2007). In January 2007 the Ugandan Government proposed degazetting nine additional municipal forest reserves (Luggya and Mugerwa, 2007).The loss of protected rainforests and also the commercialisation of farming may be expected to threaten Leopards by further reducing the suitability of habitat and increasing the likelihood of persecution as Leopards come into conflict with people.*

Conservation, management and legislation

In 2000 the Government piloted a sport hunting programme for ungulates in livestock rangelands surrounding Lake Mburo National Park in an attempt to add value to wildlife after years of massive decline. The programme has increased populations of ungulates but Leopards have not benefited from this protection because the species is not included in the hunting quota. The aim of the proposed sport-hunting quota for Leopard	*Hunter (2007) notes that the number of Leopards killed around Lake Mburo reported in the supporting statement (at least 19, although it is not clear which of these were killed by local people or government-led PAC efforts) appears high in relation to the reported loss of livestock (around 24 head per year in the region).*

Supporting Statement (SS)	Additional information
trophies and skins for personal use is to generate tangible economic benefits that would motivate communities, game ranchers and local government to protect Leopards instead of regarding them as vermin. The capacity of the Uganda Wildlife Authority to directly compensate farmers who have suffered losses from Leopard attacks on livestock is highly limited even though this is legally provided for. Evidence is provided that sport hunting would make Leopards more valuable than their being killed by farmers and not utilised (unreferenced).	
Similar species	
	The Leopard population in Uganda is contiguous with populations in adjacent countries (Democratic Republic of Congo, Kenya, Sudan, Tanzania and Rwanda).
Captive breeding	
Other comments	
	Hunter (2007) suggests granting a quota of 20 animals for Uganda, with rigorous monitoring instituted wherever hunting is introduced in the country. *At CoP 12 some problems were identified for nationally reported export quotas for Appendix II species (CoP12 Doc. 50.2 Annex 2) and at the same meeting the Export Quota Working Group was set up. At CoP 13 it was decided that the Standing Committee should consider the issue of improvement of annual export quota management and report back at CoP 14 (12.72, Rev. CoP 13). It was also decided that the Export Quota Working Group should develop guidelines for the Parties on establishing, implementing, monitoring and reporting of quotas (13.66). These will be discussed under Agenda item 36 of CoP 14.*

Reviewers:
L. Hunter, R. Lamprey, K. Nowell, TRAFFIC East/Southern Africa.

Introduction to the African Elephant *Loxodonta africana* proposals

The conservation and management of African Elephants has been a matter of considerable debate and controversy both within the arena of CITES and beyond it. Disagreement may be based as much on differences in philosophy and outlook as on differing interpretations of data. This, along with the extraordinarily high public profile of the species concerned, has ensured that discussions concerning elephants and CITES are often polarised and highly politicised. This places independent reviewers in a very difficult position and seriously compromises their ability to contribute constructively. In view of this, we provide a short account of the procedures that have been followed under CITES since African Elephants were first transferred to Appendix I in 1989, and summary analyses of proposals CoP 14 Prop. 4, 5 and 6. The analyses are confined as far as possible to brief statements of fact on these proposals, strictly within the terms of resolution Conf. 9.24 (Rev. CoP13) and other relevant resolutions and decisions of the CoP. Trade in elephants will also be discussed under Agenda Item 54.

The African Elephant was included in Appendix II in 1977 and was transferred to Appendix I in 1989. At that time, the Parties recognised that populations of the species from certain range States might not have met the Berne Criteria for inclusion in Appendix I, these being the criteria then used by Parties (now replaced by Resolution Conf. 9.24 (Rev. CoP13)). The Parties therefore approved (in Resolution Conf. 7.9, now replaced by resolution Conf. 10.9) a special mechanism, a review by a Panel of Experts, to serve as the basis for approving the transfer of certain populations of the species from Appendix I to Appendix II (but not to review amendment proposals for Appendix-II listed populations). They have also mandated a dialogue process for African Elephant range States.

Tenth meeting of the Conference of the Parties Harare (Zimbabwe), 9–20 June 1997 (CoP 10)
Botswana, Namibia and Zimbabwe all submitted proposals for consideration at CoP 10. Following review by the Panel of Experts, modified versions of the proposals were accepted by the Parties, who also adopted two Decisions (10.1 and 10.2) and two Resolutions on trade in elephants or elephant products. Acceptance of the proposals resulted in the African Elephant populations of Botswana, Namibia and Zimbabwe being transferred from Appendix I to Appendix II subject to annotations that allowed for trade in, depending on the country, hunting trophies, live animals, hides, leather goods and ivory carvings, and an experimental one-off export of raw ivory to Japan under conditions set out in Decision 10.1. All other specimens were deemed to be specimens of species included in Appendix I and the trade in them regulated accordingly.

Included in Decision 10.1 was the condition that trade in ivory could not resume until the relevant range States, the CITES Secretariat, TRAFFIC International and any other approved party agreed international systems for reporting and monitoring legal and illegal international trade and illegal hunting within elephant range States. Resolution Conf. 10.10, regarding trade in ivory specimens (one of a succession of resolutions that dealt with these issues), made a series of recommendations regarding marking of ivory, control of ivory trade, assistance to elephant range States and quotas for and trade in raw ivory. It also agreed that, regarding monitoring of illegal hunting of and trade in elephant specimens, a comprehensive, international monitoring system would be established under the supervision and direction of the Standing Committee. The Elephant Trade Information System (ETIS) and Monitoring Illegal Killing of Elephants (MIKE) have subsequently become the two designated monitoring systems for elephants under the Convention.

Decision 10.1 also determined that the Standing Committee should set in motion a mechanism for the transfer of elephant populations from Appendix II to Appendix I in the event of non-compliance with the conditions of Decision 10.1 or of the escalation of illegal hunting of elephants and/or trade in elephant products owing to the resumption of legal trade. The Decision also stated that the Standing Committee would identify, in co-operation with range States, any negative impacts of this conditional resumption of trade and determine and propose corrective measures.

Decision 10.2 set out conditions for the disposal of ivory stocks and the generation of resources for conservation in African Elephant range States. The Decision allowed for a one-off purchase for non-commercial purposes of government stocks declared by African Elephant range States to the CITES Secretariat within the 90-day period before the transfer to Appendix II of any African Elephant populations. The mechanism only applied to those range States wishing to dispose of ivory stocks and agreeing to and participating in the systems for monitoring trade and illegal killing of elephants outlined in Decision 10.1. Range States participating in this scheme were to agree that all revenues from any purchase of stockpiles by donor countries and organisations would be deposited in and managed through conservation trust funds.

With all conditions having been met, auctions of the experimental quotas of ivory detailed in the annotation were held in Botswana, Namibia and Zimbabwe between 7 and 18 April 1999. The ivory arrived in Japan in July 1999 and was delivered to its buyers.

Resolution Conf. 10.9 set out revised terms of reference for a Panel of Experts to review any future proposals to transfer populations of the African Elephant from Appendix I to Appendix II.

Eleventh meeting of the Conference of the Parties Gigiri (Kenya), 10–20 April 2000 (CoP 11)
Botswana, Namibia and Zimbabwe submitted proposals to CoP 11 to amend the annotations for their elephant populations, all entailing, amongst other things, a specified annual export quota of raw ivory, subject to various provisions. South Africa submitted a proposal to transfer its population of African Elephant from Appendix I to Appendix II with an annotation that included provision for an experimental export quota of raw ivory. Kenya jointly with India submitted a proposal to transfer all the current Appendix-II populations to Appendix I. Switzerland submitted a proposal to amend the existing annotation with respect to trade in live animals. Following discussions at the fourth dialogue meeting of African Elephant range States held immediately before CoP 11, and the African regional meeting during CoP 11, Botswana, Kenya and India, Namibia and Zimbabwe all agreed to withdraw their proposals. The South African proposal, which had been reviewed by a Panel of Experts under the terms of Resolution Conf. 10.9, was accepted in revised form, with a zero export quota for ivory. The Swiss proposal was also accepted.

Twelfth meeting of the Conference of the Parties Santiago (Chile), 3–15 November 2002 (CoP 12)
At CoP 12, Botswana, Namibia, South Africa and Zimbabwe again submitted proposals that included specified annual export quotas of raw ivory, along with other amendments to the existing annotation. Zambia submitted a proposal to transfer its elephant population from Appendix I to Appendix II, and Kenya together with India again submitted a joint proposal to transfer all the current Appendix-II populations to Appendix I. The proposals from Botswana, Namibia and South Africa were accepted in amended form, most notably without any provision for annual export quotas of raw ivory but with an allowance for another conditional one-off sale of raw ivory for each country (20 t for Botswana, 10 t for Namibia and 30 t for South Africa). The proposals from Zambia and Zimbabwe were rejected and that from Kenya and India withdrawn. The Parties also revised Resolution Conf. 10.10 at this meeting and agreed a series of decisions (nos 12.36–12.39) regarding control of internal ivory trade particularly in the ten countries known to have active internal ivory markets. The Secretariat was asked to determine for each country whether there were adequate controls over the domestic ivory market in place and, if not, to seek an action plan from that country to develop and implement such controls.

Thirteenth meeting of the Conference of the Parties Bangkok (Thailand), 2–14 October 2004 (CoP 13)
At CoP 13, South Africa and Namibia submitted proposals concerning elephants. The former, a minor amendment to the annotation for the South African population (to allow trade in leather goods for commercial purposes), was accepted. Namibia submitted a proposal to amend the annotation for its population which included provision for an annual export quota for raw ivory. This was rejected by the CoP, but an amendment to allow trade in specific, individually-marked and certified worked ivory products – known as *ekipas* - for non-commercial purposes was adopted. During the same meeting, in response to the outcomes from implementation of Decisions 12.36–12.39, the Parties adopted an *Action plan for the control of trade in African elephant ivory* (Decision 13.26). This decision addressed one of the key findings of the ETIS analysis of ivory seizure data which demonstrated that illegal trade in ivory was most directly correlated to the presence of large-scale, unregulated domestic ivory markets in Africa and Asia.

The current listings for African Elephant in the CITES Appendices are as follows:

Populations of Botswana, Namibia and South Africa (listed in Appendix II):

For the exclusive purpose of allowing:

1) trade in hunting trophies for non-commercial purposes;
2) trade in live animals for *in situ* conservation programmes;
3) trade in hides;
4) trade in leather goods for non-commercial purposes for Botswana; for commercial or non-commercial purposes for Namibia and South Africa;
5) trade in hair for commercial or non-commercial purposes for Namibia;
6) trade in individually marked and certified *ekipas* incorporated in finished jewellery for non-commercial purposes for Namibia; and
7) trade in registered raw ivory (for Botswana and Namibia, whole tusks and pieces; for South Africa, whole tusks and cut pieces of ivory that are both 20 cm or more in length and 1 kg or more in weight) subject to the following:

i) only registered government-owned stocks, originating in the State (excluding seized ivory and ivory of unknown origin) and, in the case of South Africa, only ivory originating from the Kruger National Park);
ii) only to trading partners that have been verified by the Secretariat, in consultation with the Standing Committee, to have sufficient national legislation and domestic trade controls to ensure that the imported ivory will not be re-exported and will be managed in accordance with all requirements of Resolution Conf. 10.10 (Rev. CoP 12) concerning domestic manufacturing and trade;
iii) not before the Secretariat has verified the prospective importing countries, and the MIKE programme has reported to the Secretariat on the baseline information (e.g. elephant population numbers, incidence of illegal killing);
iv) a maximum of 20 000 kg (Botswana), 10 000 kg (Namibia) and 30 000 kg (South Africa) of ivory may be traded, and despatched in a single shipment under strict supervision of the Secretariat;
v) the proceeds of the trade are used exclusively for elephant conservation and community conservation and development programmes within or adjacent to the elephant range; and
vi) only after the Standing Committee has agreed that the above conditions have been met.

On a proposal from the Secretariat, the Standing Committee can decide to cause this trade to cease partially or completely in the event of non-compliance by exporting or importing countries, or in the case of proven detrimental impacts of the trade on other elephant populations.

All other specimens shall be deemed to be specimens of species included in Appendix I and the trade in them shall be regulated accordingly.

Population of Zimbabwe (listed in Appendix II):

For the exclusive purpose of allowing:
1) export of hunting trophies for non-commercial purposes;
2) export of live animals to appropriate and acceptable destinations;
3) export of hides; and
4) export of leather goods and ivory carvings for non-commercial purposes.

All other specimens shall be deemed to be specimens of species included in Appendix I and the trade in them shall be regulated accordingly. To ensure that where a) destinations for live animals are to be appropriate and acceptable and/or b) the purpose of the import is to be non-commercial, export permits and re-export certificates may be issued only after the issuing Management Authority has received, from the Management Authority of the State of import, a certification to the effect that: in case a), in analogy to Article III, paragraph 3 (b) of the Convention, the holding facility has been reviewed by the competent Scientific Authority, and the proposed recipient has been found to be suitably equipped to house and care for the animals; and/or in case b), in analogy to Article III, paragraph 3 (c), the Management Authority is satisfied that the specimens will not be used for primarily commercial purposes.

The elements of these annotations are set out in Table 1. Regarding the export of registered raw ivory from Botswana, Namibia and South Africa, both China and Japan have asked to be assessed as prospective trading partners under the terms of the existing annotations. Assessment missions have taken place and, at its 54th meeting, held in October 2006, the Standing Committee designated Japan as a trading partner for raw ivory under the terms of the existing annotation but also asked the Secretariat to present an update on the situation at the Committee's 55th meeting (to be held immediately before CoP 14). No decision has yet been made regarding China as a trading partner.

According to condition iii) in the current annotation, the export of raw ivory cannot take place until the MIKE programme has reported to the Secretariat on the baseline information (e.g. specific site-based data on elephant population numbers, incidences of illegal killing, law enforcement efforts and other factors against which future trends will be modelled). At its 53rd meeting, the Standing Committee established some criteria for determining when the baseline data could be judged complete under the terms of this condition. At its 54th meeting the Committee agreed that the data were not yet complete, and asked the Secretariat to submit the complete information at the 55th meeting. Because of this the export of raw ivory allowed under the one-off sale agreed at CoP 12 in 2002 has not taken place.

Table 1: Summary of trade allowed under current annotations for Appendix II African Elephant populations in Botswana, Namibia, South Africa and Zimbabwe

Elements of annotations	Botswana	Namibia	South Africa	Zimbabwe
export/trade in hunting trophies for non-commercial purposes	✓	✓	✓	✓
trade in live animals for *in situ* conservation programmes	✓	✓	✓	
export of live animals to appropriate and acceptable destinations				✓
export/trade in hides	✓	✓	✓	✓
export/trade in leather goods	non-commercial purposes	commercial or non-commercial purposes	commercial or non-commercial purposes	non-commercial purposes
export of ivory carvings				non commercial purposes
trade in hair		commercial or non-commercial purposes		
trade in individually marked and certified *ekipas* incorporated in finished jewellery for non-commercial purposes		✓		
trade in registered raw ivory subject to the following:	whole tusks and pieces	whole tusks and pieces	whole tusks and cut pieces of ivory that are both 20 cm or more in length and 1 kg or more in weight	
i) only registered government-owned stocks	originating in the State (excluding seized ivory and ivory of unknown origin)	originating in the State (excluding seized ivory and ivory of unknown origin)	only ivory originating from the Kruger National Park	
ii) only to trading partners that have been verified by the Secretariat, in consultation with the Standing Committee, to have sufficient national legislation and domestic trade controls to ensure that the imported ivory will not be re-exported and will be managed in accordance with all requirements of Resolution Conf. 10.10 (Rev. CoP 12) concerning domestic manufacturing and trade	✓	✓	✓	
iii) not before the Secretariat has verified the prospective importing countries, and the MIKE programme has reported to the Secretariat on the baseline information (e.g. elephant population numbers, incidence of illegal killing)	✓	✓	✓	
iv) maximum amount of ivory that may be traded, and despatched in a single shipment under strict supervision of the Secretariat	20 000 kg	10 000 kg	30 000 kg	
v) the proceeds of the trade are used exclusively for elephant conservation and community conservation and development programmes within or adjacent to the elephant range	✓	✓	✓	
vi) only after the Standing Committee has agreed that the above conditions have been met.	✓	✓	✓	

Maintenance of the populations of African Elephant *Loxodonta africana* of Botswana, Namibia, South Africa and Zimbabwe in Appendix II, with the replacement of all existing annotations with the following annotation:

"1) The establishment of annual export quotas for trade in raw ivory is determined in accordance with Resolution Conf. 10.10 (Rev. CoP 12);

2) Trade in raw ivory is restricted to trading partners that have been certified by the Secretariat, in consultation with the Standing Committee, to have sufficient national legislation and domestic trade controls to ensure that the imported ivory will not be re-exported and will be managed in accordance with the requirements of Resolution Conf. 10.10 (Rev. CoP 12) concerning manufacturing and trade; and

3) The proceeds of the trade in raw ivory are to be used exclusively for elephant conservation and community development programmes."

Proponent: Botswana and Namibia.

Summary: See introduction to the African Elephant proposals for details of the history of treatment of this species under CITES and for the relevant current annotations of the elephant populations of Botswana, Namibia, South Africa and Zimbabwe.

According to the 2007 African Elephant Status Report, populations in the four countries are as follows:

Botswana: in 2006 – 133 829 definite, 20 829 probable and 20 829 possible;
in 2002 – 100 629 definite; 21 237 probable and 21 237 possible.

Namibia: in 2006 – 12 531 definite, 3 276 probable and 3 296 possible;
in 2002 – 7 769 definite, 1 872 probable and 1 872 possible.

South Africa: in 2006 – 17 847 definite and 638 possible;
in 2002 – 14 071 definite and 855 possible.

Zimbabwe: in 2006 – 84 416 definite, 7 033 probable and 7 367 possible;
in 2002 – 81 555 definite, 7 039 probable and 7 373 possible.

Analysis: The proponents seek an annual commercial export quota for raw ivory and may thus be interpreted as adhering to paragraph C 1) of Annex 4 of Resolution Conf. 9.24 (Rev. CoP 13) which states: 'If a Party wishes to renew, amend or delete a quota [established in accordance with Para A 2 c. of Annex 4] it shall submit an appropriate proposal for consideration at the next meeting of the Conference of the Parties.' There are no explicit guidelines in the Convention or in resolutions of the CoP for assessing such requests. However, because the relevant annotation indicates that all specimens of African Elephant in the countries concerned other than those specified in the annotation should be treated as if they were of specimens in Appendix I, the terms of Paragraph A 2 c would appear to apply. These are: 'an integral part of the amendment proposal is an export quota or other special measure approved by the Conference of the Parties, based on management measures described in the supporting statement of the amendment proposal, provided that effective enforcement controls are in place;'. No quotas are given in the current proposal. The proponents however may argue that the establishment of annual export quotas on the basis of Resolution Conf. 10.10 (Rev. CoP 12) can be considered as some 'other special measure' as allowed for in this paragraph.

Of greater ambiguity is the interpretation of the Convention and its resolutions with respect to those parts of the proposal that do not concern ivory. There appear to be three main ways in which the Parties could decide on an interpretation:

Reversion of all specimens not covered by part 7 of the existing annotation to Appendix I regulation.
As noted by the Secretariat in its preliminary comments on proposals to amend Appendices I and II, Resolution Conf. 11.21 (Rev. CoP 13) states: 'for species transferred from Appendix I to II subject to an annotation that specifies the types of specimen included in the Appendix, specimens that are not specifically included in the annotation shall be deemed to be specimens of species included in Appendix I and the trade in them shall be regulated accordingly'. As these populations were transferred from Appendix I to Appendix II under these conditions (albeit at CoP 10, before this Resolution came into effect), it would appear that the current proposal would also have the effect of reverting all other specimens covered by the existing annotation for Botswana, Namibia, South Africa and Zimbabwe to

Appendix I regulation (see Table 1 in introduction to the elephant proposals). This reversion may, arguably, apply to the stockpiled ivory that is the subject of part 7 of the existing annotation covering the populations of Botswana, Namibia and South Africa, although as it would not come into effect until 90 days after its adoption, there would be a window in which export of this ivory could take place if the provisions in the current annotation were to be met.

All specimens of the elephant populations of Botswana, Namibia, South Africa and Zimbabwe to be regulated under Appendix II with no special provisions other than for raw ivory
From the supporting statement it is clear that this option is the intent of the proposal. It may be argued on the one hand that the fact that this is not explicit in the phrasing of the proposed annotation is a drafting oversight that can be modified by the proponents without altering the substance of the proposal. On the other hand it may be argued that such a modification would result in an increase in scope of the proposal, which is not allowed under Rule 22 of the Rules of Procedure of the meetings of the Conference of the Parties.

If the Parties decide to accept the first of these arguments, the proposal would allow *inter alia* for the following kinds of trade, not allowed for in the current annotations:

trade in leather goods for commercial purposes for Botswana and Zimbabwe;
trade in hair for commercial and non-commercial purposes for Botswana, South Africa and Zimbabwe;
trade in worked ivory for South Africa and Botswana; and
trade in worked ivory products other than *ekipas* for Namibia.

With regards to trade in worked ivory, Botswana is not known to have any ivory processing industries; the situation in South Africa is unclear. Any domestic processing and trade in ivory should be in conformity with the relevant parts of Resolution Conf. 10.10 (Rev. CoP 12). Trade in worked ivory does not form part of the proposal submitted by Botswana regarding its own population of elephants (Proposal 5).

With respect to trade in hair, the CITES Secretariat has already given an opinion to South Africa that as trade in hides is allowed, and hair is embedded in raw salted hides, the Parties have already *de facto* approved trade in hairs (the current exemption for Namibia is apparently intended to address tail hair and products made from tail hair, although this is not explicit).

No change to those parts of the existing annotation that deal with specimens other than raw ivory
The Parties may decide that the proposal deals only with those parts of the existing annotations concerning raw ivory so that other parts of the annotations would remain unchanged were the proposal to be adopted.

General observations
The African Elephant populations of Botswana, Namibia, South Africa and Zimbabwe do not appear to meet the criteria for inclusion in Appendix I under Resolution Conf. 9.24 (Rev. CoP 13).

Annex 3 of Resolution Conf. 9.24 (Rev. CoP 13) states that listing of species in more than one Appendix should be avoided in general. When split-listing does occur, this should generally be on the basis of national or continental populations, rather than subspecies. This is presently the case.

Both China and Japan have asked to be assessed as prospective trading partners under the terms of the existing annotations. Assessment missions have taken place and, at its 54th meeting, held in October 2006, the Standing Committee designated Japan as a trading partner for ivory under the terms of the existing annotation but also asked the Secretariat for an update on the situation to be discussed at the Committee's 55th meeting (held immediately before CoP 14). No decision has yet been made regarding China as a trading partner.

Supporting Statement (SS)	Additional Information

Taxonomy

Range

Botswana, Namibia, South Africa, Zimbabwe.

IUCN Global Category

Globally: Vulnerable A2a (Assessed 2004, Criteria version 3.1).

Additional information

SS notes that African Elephant populations in the four countries do not have restricted ranges, nor are the populations small or showing a marked decline.

SS notes that current estimates indicate a combined population of at least 284 000 (Botswana 160 000, Namibia 16 000, South Africa 18 000, Zimbabwe 90 000).

The African Elephant Status report, 2007 *(Blanc* et al., *2007) gives the following figures for elephant populations in the four countries:*

Botswana

Year	*Definite*	*Probable*	*Possible*
2006	*133 829*	*20 829*	*20 829*
2002	*100 629*	*21 237*	*21 237*

Namibia

Year	*Definite*	*Probable*	*Possible*
2006	*12 531*	*3 276*	*3 296*
2002	*7 769*	*1 872*	*1 872*

South Africa

Year	*Definite*	*Probable*	*Possible*
2006	*17 847*	*0*	*638*
2002	*14 071*	*0*	*855*

Zimbabwe

Year	*Definite*	*Probable*	*Possible*
2006	*84 416*	*7 033*	*7 367*
2002	*81 555*	*7 039*	*7 373*

Both China and Japan have asked to be assessed as prospective trading partners under the terms of the existing annotations. Assessment missions have taken place and, at its 54th meeting, held in October 2006, the Standing Committee designated Japan as a trading partner for ivory under the terms of the existing annotation but also asked the Secretariat for an update on the situation to be discussed at the Committee's 55th meeting (held immediately before CoP 14). No decision has yet been made regarding China as a trading partner.

Reviewers:
R. Sharp, TRAFFIC East/Southern Africa

Amendment of the annotation to the population of African Elephant *Loxodonta africana* of Botswana to read:

"For the exclusive purpose of allowing in the case of the population of Botswana:

1) trade in hunting trophies for non-commercial purposes;

2) trade in hides for commercial purposes;

3) trade in leather goods for commercial purposes;

4) trade in live animals for commercial purposes to appropriate and acceptable destinations (and as determined by the national legislation of the country of import);

5) trade annually in registered stocks of raw ivory (whole tusks and pieces of not more than 8 tonnes) of Botswana origin owned by the Government of Botswana for commercial purposes only with trading partners that have been certified by the Secretariat, in consultation with the Standing Committee, to have sufficient national legislation and domestic trade controls to ensure that the imported ivory will not be re-exported and will be managed in accordance with the requirements of Resolution Conf. 10.10 (Rev. CoP 12) concerning manufacturing and trade; and

6) trade in registered stocks of raw ivory (whole tusks and pieces of not more than 40 tonnes) of Botswana origin owned by the Government for commercial purposes on a one-off sale immediately after the adoption of the proposal. Botswana will trade only with trading partners that have been certified by the Secretariat, in consultation with the Standing Committee, to have sufficient national legislation and domestic trade controls to ensure that the imported ivory will not be re-exported and will be managed in accordance with the requirements of Resolution Conf. 10.10 (Rev. CoP 12) concerning manufacturing and trade.

Proponent: Botswana

Summary: See introduction to the African Elephant proposals for background information.

The elephant population in Botswana in 2006 was estimated at 133 829 definite, 20 829 probable and 20 829 possible. In 2002 the population was estimated at 100 629 definite; 21 237 probable and 21 237 possible.

This proposal would change the current listing of the African Elephant population of Botswana in the following ways:

Trade in live animals would now be allowed for commercial purposes to appropriate and acceptable destinations, while previously trade in live animals from Botswana was allowed only for *in situ* conservation programmes (at present commercial trade in live animals is allowed only from Zimbabwe).

Trade in leather goods would now be allowed for commercial purposes; at present such trade from Botswana is only allowed for non-commercial purposes (commercial trade is currently allowed from Namibia and South Africa).

An annual trade in registered stocks of raw ivory totalling not more than 8 tonnes to certified trading partners.

A one-off sale of accumulated raw ivory stocks as envisaged under current paragraph 7) of the existing annotation, although under simplified conditions and for 40 tonnes (the current annotation specifies 20 tonnes).

The statement 'all other specimens shall be deemed to be specimens of species included in Appendix I, and the trade in them shall be regulated accordingly' which currently applies would no longer appear.

Analysis: The proponents seek an annual commercial export quota for raw ivory and may thus be interpreted as adhering to paragraph C 1) of Annex 4 of Resolution Conf. 9.24 (Rev. CoP 13) which states: 'If a Party wishes to renew, amend or delete a quota [established in accordance with Para A 2 c. of Annex 4] it shall submit an appropriate proposal for consideration at the next meeting of the Conference of the Parties.' There are no explicit guidelines in the Convention or in resolutions of the CoP for assessing such requests. However, because the relevant annotation indicates that all specimens of African Elephant in the countries concerned other than those specified in the annotation should be treated as if they were of specimens in Appendix I, the terms of Paragraph A 2 c would appear to apply. These are: 'an integral part of the amendment proposal is an export quota or other special measure approved by the Conference of the Parties, based on management measures described in the supporting statement of the amendment proposal, provided that effective enforcement controls are in place'. No basis for the annual export quota of 8 tonnes of raw ivory is given. However, with a population of over 130 000 elephants, an accumulation of 8 tonnes per year retrieved from natural mortality and management measures seems plausible.

It is not completely clear from the proposal or supporting statement whether the 40 tonnes of raw ivory proposed for a one-off sale (part 6 of the proposed annotation) is in addition to or includes the 20 tonnes already included in part 7 of the existing annotation for the Botswanan population of African Elephant. However, the supporting statement indicates a current stockpile of 55 tonnes of raw ivory of which nearly 9 tonnes is confiscated poached ivory, leaving just over 46 tonnes of other ivory. This implies that the latter interpretation is intended, that is, that the proposal is effectively for an increase of 20 tonnes over the amount already agreed for export once the conditions in the existing annotation are met.

Both China and Japan have asked to be assessed as prospective trading partners under the terms of the existing African Elephant annotations. Assessment missions have taken place and, at its 54th meeting, held in October 2006, the Standing Committee designated Japan as a trading partner for ivory under the terms of the existing annotation but also asked the Secretariat for an update on the situation to be discussed at the Committee's 55th meeting (held immediately before CoP 14). No decision has yet been made regarding China as a trading partner.

With respect to trade in live animals and leather goods, no quota is proposed, so that the precautionary measures in paragraph A 2 b appear to apply (the Conference of the Parties must be satisfied with the implementation of the requirements of the Convention, in particular Article IV, and be satisfied that appropriate enforcement controls are in place). Details of proposed or actual rates of offtake for live animals or leather goods for commercial purposes are not provided in the supporting statement, nor are details of enforcement controls. However, given likely quantities in trade, and the current status of Botswana's elephant population, there is no reason to think that trade in these will not be in accordance with Article IV of the Convention. The IUCN/SSC African Elephant Specialist Group has prepared guidelines for the *in situ* translocation of the African Elephant for conservation purposes.

Supporting Statement (SS)	Additional information
Range	
Botswana.	
IUCN Global Category	
	Globally: Vulnerable A2a (Assessed 2004, Criteria version 3.1).
Additional information	
Population estimates for 13 years in the period 1989–2006 are given. That for 1989 is 54 596; that for 2006 is 154 658.	*The* African Elephant Status report, 2007 *(Blanc* et al., *2007) gives the following figures for the elephant population in Botswana:*

Year	*Definite*	*Probable*	*Possible*
2006	*133 829*	*20 829*	*20 829*
2002	*100 629*	*21 237*	*21 237*

Supporting Statement (SS)	Additional information
Live specimens: Botswana traded in 30 live animals with South Africa in 1998 and has donated 300 live animals to Angola (of which only 20 had been captured at the time of writing). In addition, 500 animals had been offered to Mozambique.	***Live specimens:*** *The IUCN/SSC African Elephant Speciallist Group has prepared guidelines for the* in situ *translocation of the African Elephant for conservation purposes (Dublin and Niskanen, 2003).*
Ivory: As of 23.10.06, the stock of raw ivory totalled some 55 tonnes, of which 8.8 tonnes is confiscated poached ivory and the remainder from problem animal control or recovered from carcasses.	***Ivory:*** *No basis is given for the proposed annual quota of 8 tonnes of raw ivory. Lindsay (2000), writing at a time when the Botswana elephant population was estimated to be around 15% lower than at present, considered that a hypothetical export of 12 tonnes of raw ivory a year (excluding trophies) would be sustainable.*

Reviewers:
R. Sharp, TRAFFIC East/Southern Africa

A. Amendment of the annotation regarding the populations of African Elephant *Loxodonta africana* of Botswana, Namibia and South Africa to:

a) include the following provision:

"No trade in raw or worked ivory shall be permitted for a period of 20 years except for:

1) raw ivory exported as hunting trophies for non-commercial purposes; and

2) ivory exported pursuant to the conditional sale of registered government-owned ivory stocks agreed at the 12th meeting of the Conference of the Parties"; and

b) remove the following provision:

"6) trade in individually marked and certified *ekipas* incorporated in finished jewellery for non-commercial purposes for Namibia".

B. Amendment of the annotation regarding the population African Elephant *Loxodonta africana* of Zimbabwe to read:

"For the exclusive purpose of allowing:

1) export of live animals to appropriate and acceptable destinations;
2) export of hides; and
3) export of leather goods for non-commercial purposes.

All other specimens shall be deemed to be specimens of species included in Appendix I and the trade in them shall be regulated accordingly.

No trade in raw or worked ivory shall be permitted for a period of 20 years.

To ensure that where a) destinations for live animals are to be appropriate and acceptable and/or b) the purpose of the import is to be non-commercial, export permits and re-export certificates may be issued only after the issuing Management Authority has received, from the Management Authority of the State of import, a certification to the effect that: in case a), in analogy to Article III, paragraph 3 (b) of the Convention, the holding facility has been reviewed by the competent Scientific Authority, and the proposed recipient has been found to be suitably equipped to house and care for the animals; and/or in case b), in analogy to Article III, paragraph 3 (c), the Management Authority is satisfied that the specimens will not be used for primarily commercial purposes."

Proponent: Kenya and Mali.

Summary: See introduction to the elephant proposals for background information.

According to the 2007 African Elephant Status Report, populations in the four countries are as follows:

Botswana: in 2006 – 133 829 definite, 20 829 probable and 20 829 possible;
in 2002 – 100 629 definite; 21 237 probable and 21 237 possible.

Namibia: in 2006 – 12 531 definite, 3 276 probable and 3 296 possible;
in 2002 – 7 769 definite, 1 872 probable and 1 872 possible.

South Africa: in 2006 – 17 847 definite and 638 possible;
in 2002 – 14 071 definite and 855 possible.

Zimbabwe: in 2006 – 84 416 definite, 7 033 probable and 7 367 possible;
in 2002 – 81 555 definite, 7 039 probable and 7 373 possible.

This proposal would change the current listing of the African Elephant populations in the Appendices as follows:

Trade in individually marked and certified *ekipas* incorporated in finished jewellery for non-commercial purposes for Namibia would no longer be permitted.

Export of hunting trophies for non-commercial purposes from Zimbabwe would no longer be permitted.

Export of ivory carvings for non-commercial purposes from Zimbabwe would no longer be permitted.

The proposal would have no effect on the current listings of the elephant populations of Botswana and South Africa.

In addition the proponents wish to add an annotation to the Appendices to the effect that, in the matter of raw and worked ivory, no change in the current listing for the populations of Botswana, Namibia, South Africa or Zimbabwe should be allowed to take place for 20 years (presumably from the time at which the proposal were to come into effect).

Analysis: The proposal seeks to broaden the categories of elephant specimens that should be, under the current wording 'deemed to be specimens of species included in Appendix I' for the Namibian and Zimbabwean populations. Neither population appears to meet the criteria for inclusion in Appendix I set out in Resolution Conf. 9.24 (Rev. CoP 13).

With regard to the proposal to prevent any change in the current listing for 20 years for trade in raw or worked ivory, it is not possible to assess this against Resolution Conf. 9.24 (Rev. CoP 13), as it refers to future conditions that cannot presently be known. No similar restriction currently forms part of any annotation to the Appendices and there is no precedent under the Convention for such a moratorium. However, there is some precedent for recommending actions concerning the Appendices over more than one interval between meetings of the Conference of the Parties, in Resolution Conf. 9.24 (Rev. CoP 13), Annex 4, Precautionary measures, which states: no species listed in Appendix I shall be removed from the Appendices unless it has been first transferred to Appendix II, with monitoring of any impact of trade on the species for at least two intervals between meetings of the Conference of the Parties. The period of time required for this precautionary process to unfold, however, is considerably less than the 20 years proposed here, and the process outlined in Resolution Conf. 9.24 (Rev. CoP 13) would allow for the species in question to be traded under permit in accordance with Article IV of the Convention.

The proposed annotation only concerns those elephant populations that are currently included in Appendix II. No such restriction would apply to those that are currently in Appendix I, or any that might be transferred from Appendix I to Appendix II in future.

Annex 3 of Resolution Conf. 9.24 (Rev. CoP 13) states that listing of species in more than one Appendix should be avoided in general. When split-listing does occur, this should generally be on the basis of national or continental populations, rather than subspecies. This is presently the case.

Supporting Statement (SS)	Additional Information
Range	
Botswana, Namibia, South Africa, Zimbabwe.	
IUCN Global Category	
	Globally: Vulnerable A2a (Assessed 2004, Criteria version 3.1).
Additional information	
Annex 1 of SS provides figures for Namibia from *2002 African Elephant Status Report*.	*The* African Elephant Status report, 2007 *(Blanc* et al., *2007) gives the following figures for the elephant population in Namibia*

Year	*Definite*	*Probable*	*Possible*
2006	*12 531*	*3 276*	*3 296*
2002	*7 769*	*1 872*	*1 872*

Supporting Statement (SS)	Additional Information
Annex 1 of SS provides figures for Zimbabwe from *2002 African Elephant Status Report*. Main text of SS states: 'At best it seems there is considerable uncertainty regarding the actual size of Zimbabwe's elephant population, but it is likely to be lower than the figures claimed by official sources.'	*The* African Elephant Status Report, 2007 *(Blanc* et al., *2007) gives the following figures for the elephant population in Zimbabwe.* *Year* / *Definite* / *Probable* / *Possible* *2006* / *84 416* / *7 033* / *7 367* *2002* / *81 555* / *7 039* / *7 373*
SS suggests that the rate of seizures might represent 15% of contraband ivory in trade and that extrapolating from this indicates some 19 000 have been illegally killed annually since October 2004.	*No references for this estimate are provided. It has not been possible in analysing ETIS data to come up with credible conversion ratios for relating ivory seizures to the overall amount of ivory in trade or the numbers of elephants killed illegally (TRAFFIC East/Southern Africa*, *2007).*
Annex 2 to the SS includes a table (A) entitled 'Significant ivory seizures since CoP13' and a table (B) entitled 'Record of elephant ivory seizures from Oct 1998 to Nov 2006'.	*Thirteen of the cases in Table A are in ETIS with the same values. Six cases are in ETIS but with values for weight that are collectively 2 204 kg less than those reported in Table A. Six cases are not currently in ETIS and can not be verified at this time. These cases collectively represent 7 814 kg of ivory, plus 37 sets of tusks (Traffic East/Southern Africa, 2007).* *Sixty-three cases in Table B are in ETIS with the same values. Twenty-two cases are in ETIS but with values for weight that are collectively 2 983 kg less than those reported in Table B. Twenty-one cases are not currently in ETIS and can not be verified at this time. These cases collectively represent 937 kg and 119 tusks, 158 cut pieces, 1 001 items and 123 pieces without a description (Traffic East/Southern Africa, 2007).*

Reviewers:
R. Sharp, Traffic East/Southern Africa.

Amendment of the annotation to the Bolivian population of Vicuña *Vicugna vicugna* to read as follows:

Population of Bolivia (listed in Appendix II):

For the exclusive purpose of allowing international trade in wool sheared from live Vicuñas, and in cloth and items made thereof, including luxury handicrafts and knitted articles.

The reverse side of the cloth must bear the logotype adopted by the range States of the species, which are signatories to the *Convenio para la Conservación y Manejo de la Vicuña*, and the selvages the words 'VICUÑA-BOLIVIA'. Other products must bear a label including the logotype and the designation 'VICUÑA-BOLIVIA-ARTESANÍA'.

All other specimens shall be deemed to be specimens of species included in Appendix I and the trade in them shall be regulated accordingly."

Proponent: Bolivia.

Summary: The Vicuña *Vicugna vicugna* is a wild camelid, prized for its fine quality wool. It is native to the high Andes of Argentina, Chile, Bolivia and Peru. The global Vicuña population decreased to a few thousand during the mid-1960s due to over-exploitation, leading to the establishment of the *Convenio para la Conservación y Manejo de la Vicuña* (The Vicuña Convention). The species was included in Appendix I in 1975. With improving management, numbers have increased, and several populations have subsequently been transferred to Appendix II. The Bolivian population is currently estimated to number over 60 000 animals and is believed to be increasing.

In 1997 the Bolivian populations in the Conservation Units of Mauri-Desguadero, Ulla Ulla and Lipez Chichas, which at that time comprised 70% of the national population, were transferred to Appendix II with an annotation to allow only trade in cloth (not fibre) made from live sheared Vicuña, but with a zero export quota. The zero quota was removed at CoP 11. At CoP 12 the remaining populations, until then still included in Appendix I, were transferred to Appendix II. The current annotation reads:

> For the exclusive purpose of allowing international trade in: a) wool and products derived therefrom sheared from live animals of the populations of the Conservation Units of Mauri-Desaguadero, Ulla Ulla and Lípez-Chichas; and b) products made from wool sheared from live animals of the rest of the population of Bolivia. The reverse side of the cloth must bear the logotype adopted by the range States of the species, which are signatories to the *Convenio para la Conservación y Manejo de la Vicuña*, and the selvages the words 'VICUÑA-BOLIVIA'. Other products must bear a label including the logotype and the designation 'VICUÑA-BOLIVIA-ARTESANÍA'.
>
> All other specimens shall be deemed to be specimens of species included in Appendix I and the trade in them shall be regulated accordingly.

The annotation therefore allows trade in *wool and products* derived from live-sheared animals of the populations of the Conservation Units of Mauri-Desaguadero, Ulla Ulla and Lípez-Chichas, but limited to *products* made from fibre sheared from live animals of the rest of the population of Bolivia.

Bolivia wishes to create economic incentives for communities within the range of the Vicuña to engage in the conservation, management and sustainable use of the species. However, although the whole Bolivian population is currently listed in Appendix II and sale of fibre and/or products has been permitted under CITES since COP 12 and live-shearing has taken place, to date the planned auction of the fibre stockpile (currently 753 kg) held by the Bolivia Government has not taken place as the necessary legislation allowing this was not in place. Bolivia has recently legally established mechanisms for the trade in fibre and products from live-sheared Vicuña. However, under the current annotation, it would not be possible to export any of the stockpiled fibre that does not originate from the Conservation Units of Mauri-Desguadero, Ulla Ulla and Lipez Chichas. Fibre from Vicuña outside these three conservation units would have to be processed before export. There is little wool-processing capacity in Bolivia therefore the requirement to process fibre potentially hinders the attainment of economic benefits by communities from parts of the Vicuña range outside those three conservation units.

Analysis: Three Bolivian populations of Vicuña have been in Appendix II since 1997. The remaining populations were transferred to Appendix II in 2002. Conditions regarding export of these populations differ. For the populations in Appendix II since 1997, export of fibre and cloth is allowed. For those in Appendix II since 2002, export of cloth only is allowed. This proposal is to harmonise the annotations so that export of fibre and cloth from all populations will be allowed.

The Bolivian population of the Vicuña does not meet the criteria for inclusion in Appendix I: it is not small, nor does it have a restricted range, nor is it declining. Bolivia states they have adequate monitoring systems and coordinated enforcement measures in place to satisfy the precautionary measures in Resolution Conf. 9.24 (Rev. CoP 13). The argument for community involvement and support of the National Programme for the Conservation of Vicuña has been based on the expectation of economic benefits flowing into communities. The proposed annotation would facilitate the trade of fibre from live-sheared Vicuña from the rest of the Bolivian population outside the initial three Conservation Units, and potentially increases the ability for economic benefits to be attained by these communities within the range of the Vicuña.

This proposal has the support of the *Vicuña Convention* to which all other Vicuña range States are signatories.

Supporting Statement (SS)	Additional information
Taxonomy	
Range	
Range States of *Vicugna vicugna* are: Argentina, Bolivia Chile and Peru. Ecuador also has a small population (introduced). In Bolivia the Vicuña is distributed in the Altiplano and upper Andean regions of the Departments of La Paz, Oruro, Potosi Cochabamba and Tarija. Information on area of occupation is from 1997.	
IUCN Global Category	
	Lower Risk/Conservation Dependent (Assessed 1996, Criteria version 2.3).

Other information

Threats	
Threats include; commercial poaching by hunting parties, natural predators and illness from external parasites e.g. scabies. Hunting dogs are used to scare Vicuñas consuming domestic animal forage. These dogs sometime kill Vicuña. The growth of illegal hunting has been slowed by giving custody and rights to use the Vicuñas to the rural communities. However it is difficult to estimate the quantity of illegal fibre traded. Communities see Vicuña as a competitor to domestic livestock for scarce resources.	*No information was available on extent of poaching although it still occurs (TRAFFIC South America, 2007; Renaudeau d'Arc, 2005).*
Conservation, management and legislation	
The Vicuña Convention is the fundamental instrument for the conservation of the species. At the XXV Ordinary Meeting of the Vicuña Commission administering the Vicuña Convention, Bolivia sought the endorsement of the Vicuña Convention to modify the annotation.	*The Final Proceedings of the XXV Ordinary Meeting of the Vicuña Convention also contain Resolution 285/06 on approval of the Action Plan for the control of poaching and illegal trade in Vicuña products, Resolutions 287/06 and 288/06 on management of*

Supporting Statement (SS)	Additional information
Resolution 294/06 endorses the proposal to amend the annotation.	*shared populations, Resolution 291/06 on the 10 year Action Plan for the Vicuña Convention.*
The Government of Bolivia has committed itself to the generation of conditions for sustainable use of the species through live shearing of Vicuñas with participation of rural communities with the perspective of giving communities alternatives to improve their livelihoods as well as the protection of Vicuña inside and outside protected areas. Bolivia has a National Programme for the Conservation of Vicuña.	
Environmental Law (#1333, Issued in 1992) established standards for control and inspection by the relevant Authorities.	
A Mechanism for the Commercialisation of Vicuña fibre and general "guidelines" for the Species' Programme (Supreme Decree No. 28593/2006) has been approved which, among other measures, includes • orders to grant rural communities custodianship of the Vicuña with the aim of protection and recuperation recognising the dedication with which communities have protected this resource; • use and trade of fibre from live-sheared Vicuña with all fibre having a Certification of Origin issued by the Competent National Authority; • labels and marks established within the Vicuña Convention, CITES and the National Programme for the Conservation and Sustainable Use of Vicuña, must be used for both national and international trade.	
Community Managers of the Vicuñas are responsible for the Vicuña under their geographic jurisdiction. Registers are kept of capture and shearing activities. Wildlife guards, Park Guards and community watchmen monitor populations and poaching incidents.	*Renaudeau d'Arc (2007) reports that since 2005 community wildlife wardens no longer conduct periodic censuses.*
The SS presents population figures showing increasing populations of Vicuña, both in the Conservation Units of Mauri-Desguadero, Ulla Ulla and Lipez Chichas and in those units for which the annotation amendment is proposed. Vicuña in Mauri-Desguadero, Ulla Ulla and Lipez Chichas comprise just under 70% of the estimated total population in Bolivia.	*Population figures for 2000 and 2001 for Mauri-Sabaya (which comprises around 12% of the total Bolivian population) were queried in the previous Analyses for CoP 12 (IUCN SSC and TRAFFIC, 2002) and it seems that population figures in general for the past few years have tended to be projections, rather than censuses (Laker, 2007; TRAFFIC South America, 2007; Renaudeau d'Arc, 2007). A study in 2005 on the economics of Vicuña capture in one of the Apolobamba Vicuña communities, mentions that the figures for Vicuña population size provided by the government appear too low given the population growth rates from previous years (Aguilar and Rushton, 2005).*
The Supreme Decree 28693 of 2006 establishes mechanisms for the trade of Vicuña. A total of 752.5 kg of accumulated stock exists although the SS also presents a table showing fibre accumulated from 1998 to 2006 with a total of 792 kg.	*Bolivia's stockpile has increased from 195 kg reported in 2002 (CITES CoP 12 Proposals numbers 12 and 13) to 752.5 kg. Bolivia has established export quotas but despite allowing the export of both fibre and products, Bolivia has only reported the export of 500 grams of hair. There is little wool-processing capacity in Bolivia, therefore the restriction of trade in fibre reduces the potential for the sale of fibre and the potential for communities to benefit from the sustainable use of their resources.* *The stockpiled fibre is held by the Government, and local communities will only receive revenue from it when the fibre is sold (TRAFFIC South America, 2007). Renaudeau d'Arc (2005) provides evidence that the community involvement in Vicuña conservation is based*

Supporting Statement (SS)	Additional information
	on cultural and social values as well as on the expectation of economic benefits. However, support for conservation may weaken if long-promised economic benefits are not forthcoming in the near future. *There has been improvement of control and management of the species in Bolivia although certain problems still exist which are in part due to lack of funds (Vilalba, 2007).*
Enforcement measures	
The capacity to apply CITES has been reinforced. A project to control and monitor Vicuña populations and sub-populations was due to be launched in 2007. Five percent of the transaction value will go to the Prefecturas, with which they will implement better control activities and local monitoring. The capacity of more than 100 community watchmen will be strengthened through capacity building activities for control and monitoring.	*No information was available on extent of poaching or magnitude of illegal trade although TRAFFIC South America (2007) confirms this still occurs and some information is given in Renaudeau d'Arc (2005). Despite some poaching, Vicuña populations had continued to increase.* *Vicuña fibre resembles that of other South American camelid species which are also traded internationally (Lichtenstein, 2007).* *Lichtenstein (2007) notes that although community participation will help in reducing poaching at the local level, the actors involved in smuggling fibre outside the country are probably from outside the communities and an illegal market is already established. Once commercialisation is completely open it will be extremely important to ensure strict controls at customs and borders (Ibid).*
Captive breeding	
Captive breeding is not part of the conservation and sustainable use programme in Bolivia, which focuses on wild populations.	*The Patacamaya Experimental Station holds animals for experimental purposes, and not for the production of parental stocks or the equivalent (TRAFFIC South America, 2002).*
Other comments	
	Sustainable natural resource use is an important element in Bolivia's effort towards meeting the Millennium Developments Goals (MDG) (Anon, Reports of the Millennium Development Goals Bolivia – United Nations 2001–2004). It has always been intended that sustainable use of Vicuña should also contribute to poverty reduction. *Pani (2007) notes that there is recent export of live hybrids of Vicuña with domestic camelids as "Paco-Vicuña" allegedly without CITES documentation, despite the export of live Vicuñas being deemed Appendix I specimens (see Resolution 296/06 of the Final Proceedings of the XXV Meeting of The Vicuña Convention (Anon., 2006). This is not specific to Bolivia.*

Reviewers:
G. Lichtenstein, M. Pani, N. Rendaudeau d'Arc, TRAFFIC South America, L. Vilalba.

Inclusion of Barbary Red Deer *Cervus elaphus barbarus* in Appendix I.

Proponent: Algeria

Summary: The Barbary Red Deer is a subspecies of the Red Deer *Cervus elaphus*. Under most current classification systems for the Red Deer (which recognise up to 22 subspecies), the subspecies is confined as a wild population to Tunisia, Algeria and Morocco in Northern Africa. The Moroccan population was reintroduced from Tunisia in the 1990s. Recent genetic analysis, however, has indicated that the Red Deer populations in North Africa are virtually indistinguishable from those in Sardinia (Italy) and the reintroduced population in Corsica (France), generally ascribed to *C. elaphus corsicanus*. One recent assessment considers all these populations to belong to a separate species, which under rules of priority for nomenclature would be called *Cervus corsicanus*.

The north African populations occupy dense sub-humid evergreen montane scrub forests. The taxon was assessed as Lower risk/near threatened by IUCN in 1996, having previously been considered Vulnerable (pre-1994 criteria). The size of the population in Tunisia is not known for certain. According to one recent report it may number perhaps 2 000 and growing, due at least in part to conservation measures. However, another report, based on limited surveys in 2002 and 2003 concluded that the population was more likely to be 700-800, scattered in a number of different localities. There are few data for Algeria, but the population there may also be increasing. Poaching, forest fires, predation by feral dogs and infection from livestock diseases and parasites are all believed to affect the species. Hunting expeditions that affect other ungulates in Northern Africa, such as *Gazella dorcas* and *Gazella leptoceros* (see Proposals 11 & 12), probably do not affect *Cervus elaphus barbarus,* which is not found in areas where these expeditions generally hunt. The population of Red Deer in Sardinia was estimated in 2005 to number at least 5 000.

Cervus elaphus barbarus was included in Appendix III by Tunisia in 1976. The species *Cervus elaphus* is not included in the Appendices, although two other subspecies are: *C. elaphus bactrianus* (in Appendix II since 1975) and *C. e. hanglu* (in Appendix I since 1975). Very little trade in any of these taxa has been reported in the CITES Trade Database and it is unlikely that there is significant international trade in this subspecies. The proposal seeks to transfer the subspecies from Appendix III to Appendix I.

Analysis: The Barbary Red Deer in North Africa has a relatively limited range. The best available information indicates a population of no more than a few thousands (and possibly fewer) in generally small sub-populations. According to the guidelines in Annex 5 of Resolution Conf. 9.24 (Rev. CoP 13), the North African population of Barbary Red Deer might meet the biological criteria for inclusion in Appendix I. However, the population is reported to be increasing and the range expanding in the major part of its distribution. If recent taxonomic assessments are accepted, the taxon also occurs in Sardinia and as a reintroduced population in Corsica, in which case its overall population may number several thousands and would be unlikely to meet the biological criteria for inclusion in Appendix I set out in Resolution Conf. 9.24 (Rev. CoP13). Although the taxon has been reported in trade, there is little evidence that it is affected by current levels of international trade or would be likely to be affected in the future.

Annex 3 of Resolution Conf. 9.24 (Rev. CoP13) states that split-listings that place some populations of a species in the Appendices, and the rest outside the Appendices, should normally not be permitted (although in the case of *Cervus elaphus* this situation already exists). It also notes that when split-listing does occur, this should generally be on the basis of national or regional populations, rather than subspecies and that taxonomic names below the species level should not be used in the Appendices unless the taxon in question is highly distinctive and the use of the name would not give rise to enforcement problems. In this case, distinguishing specimens in trade from other specimens of *Cervus elaphus* would almost certainly be problematic.

Supporting Statement (SS)	Additional information
	Taxonomy
Cervus elaphus barbarus	*Recent genetic studies indicate that the North African population of Red Deer is extremely similar to that on Sardinia (and, by inference Corsica, which is a reintroduced population of Sardinian animals), generally known as* C. e. corsicanus, *and these populations should be grouped together (Ludt* et al*.,*

Supporting Statement (SS)	Additional information
	2004), although it is not clear if this would entail synonymising the two subspecies. If so Cervus elaphus corsicanus *(Erxleben, 1777) would take precedence over* C. e. barbarus *(Bennett, 1848) and the taxon in the proposal would therefore cease to exist.* *Pitra* et al. *(2004) also recognise the very close affinity of the North African and Sardinian/Corsican populations but consider that they might merit separation at specific level from other Red Deer populations. If so they would be called* C. corsicanus.
Range	
Algeria	*Algeria and Tunisia. Historically extinct in Morocco and reintroduced in the 1990s (Anon, 2007).* *Depending on taxonomy adopted, the taxon may also occur in Italy (Sardinia) and France (Corsica).* *The species* Cervus elaphus *has a very wide range. The UNEP-WCMC Species Database (which recognises* C. canadensis *as a synonym of* C. elaphus) *lists 49 range States and seven States with introduced populations.*
IUCN Global Category	
	Lower risk/near threatened (Assessed 1996, Criteria version 2.3).

Biological criteria for inclusion in Appendix I

A) Small wild population

(i) Population or habitat decline; (ii) small sub-populations; (iii) one sub-population; (iv) large population fluctuations; (v) high vulnerability

Population [in Algeria] of between 50 and 60 individuals.	*Estimates in the 1950s and early 1960s (eg. Kock & Schomber, 1961; Salez, 1959a, b) were of a few hundred individuals. Reported in the 1980s as having increased significantly in numbers, both in Tunisia and in Algeria (Kacem, 1986; Dolan, 1988; Trense, 1989). It is possible that in the dense maquis of Algeria, densities up to 30/40 deer per km² occur. In Tunisia, de Smet (2007) reported that there were probably 2 000 animals in the northern forests and the range was still expanding. However, on the basis of limited surveys in 2002 and 2003 Abdoulaye Oumani* et al., *(2003) thought that the Tunisian population might be closer to 700-800, scattered in small populations in a number of different localities.* *No recent information on numbers in Morocco was located.* *The population of* C. e. corsicanus *on Sardinia was estimated in 2005 to number at least 5 000 individuals. In Corsica, where it was reintroduced in the 1970s, it is found in three small sub-populations (Lovari, 2006; IUCN, in press).*

B) Restricted area of distribution

(i) Fragmented or localised population; (ii) large fluctuations in distribution or sub-populations; (iii) high vulnerability; (iv) decrease in distribution, population, area or quality of habitat, or recruitment

The taxon is endemic to North Africa and is threatened with extinction. Currently found in a band along the east of Algeria and extending slightly into Tunisia. The distribution and range has been reduced by fire,	*The range reportedly contracted during the 20th century (Kacem, 1986; Dolan, 1988; Kowalski & Rzebik-Kowalska, 1991; Whitehead, 1993). However, the range in Tunisia is currently said to be expanding (de Smet, 2007).*

Supporting Statement (SS)	Additional information
urbanisation and poaching. The subspecies' natural habitat, cork oak forest, has been degraded through urbanization, fires and overgrazing.	
C) Decline in number of wild individuals **(i) Ongoing or historic decline; (ii) inferred or projected decline**	
	There are no reliable historic population data, but the Barbary Red Deer is known to have declined during the 20th century and was considered to be near extinction in the 1960s (Geist, in press).
Trade criteria for inclusion in Appendix I	
The species is or may be affected by trade	
No information included.	*Very little trade has been recorded. Nine specimens have been recorded as exported for zoos, with no source code recorded. A further nine wild specimens were exported to Morocco for reintroduction. South Africa reported importing six wild-sourced horns as trophies from Austria. All other trade was in captive-bred specimens mainly for zoo or educational purposes, with only three being traded for commercial purposes originating from Tunisia and imported from Germany to the US.* *Trophies from* C. e. barbarus *are said to be of a low standard and not likely to be in great demand internationally. Generally there is an international market for Red Deer and their products. Antler velvet is used in traditional medicines (Banwell, 2007).* *However, according to TRAFFIC (2007) there is no evidence that Barbary Deer's antler velvet is traded internationally.* *Trade in other CITES listed subspecies (*C. e. bactrianus *(App II) and* C. e. hanglu *(App I)) has been minimal and predominantly in captive bred pre-convention specimens.*
Other information	
Threats	
Poaching and forest fires.	*Poaching takes place for the sale of the meat and hides as well as for local consumption (Banwell, 2007).* *Current threats may include predation by feral dogs and infection from livestock diseases and parasites where their range overlaps (Geist, in press).*
Conservation, management and legislation	
CITES Appendix III. Considered highly protected in Algeria. Protected under Law No. 04-07 14th August 2004 (Articles 54-58, protected species) and Ordinance No 06-05 15th July 2006. In Algeria the species is managed nationally by the administration in charge of hunting (Direction Générale des forêts) and regionally by the Conservations of forests, National Parks and reserves. The population is monitored. Reintroductions have	*Listed in Appendix I of the Convention on Migratory Species in 1979.* *Despite prohibitions on hunting enacted in Tunisia at the turn of the 20th century, Barbary Red Deer declined and were near extinction in the 1960s.* *In the 1960s conservation measures were put in place. A forest reserve of 16 000 ha was established in 1963 in Tunisia to conserve these deer and in 1966 a 417-ha breeding enclosure was established near Feidja, followed by two others at Ain-Baccouch in*

Supporting Statement (SS)	Additional information
taken place in Beiaia and Skikda.	*1975 (100 ha) and Mehebes in 1978 (300 ha). Deer have increased significantly in numbers, both in Tunisia and in Algeria (Kacem, 1986; Dolan, 1988; Trense, 1989; Geist, in press).* *In Morocco reintroduced populations are found in Tazzeka National Park and d'Aïn-Leuh Reserve (Anon. 2007).* *The Corsico-Sardinian Deer is strictly protected under Appendix II of the Bern Convention and Annexes II (as a priority species) and IV of the EU Habitats and Species Directive. It occurs in numerous protected areas across its range and also in protected areas outside its range where it has been introduced.*
	Similar species
	*The Barbary Red Deer is a small bodied form of Red Deer very similar to the West-European Red Deer (*C. e. elaphus *(Geist, in press). The Corsico-Sardinian and North African taxa lack the bez tine, present in most other Red Deer taxa (Pitra* et al., *2004).*
	Captive breeding
Breeding (*ex situ*) in the Cynergetic Center of Zéralda. Has worked since 1995 to reintroduce the species into its original range; the areas of Bejaia and Skikda were the first areas for reintroduction.	*Captive-bred specimens have been exported from Tunisia and Morocco (CITES Trade Database 2007).* *San Diego Wild Animal Park holds 60 specimens (ISIS, 2007).*

Reviewers:
D.B. Banwell and V. Geist, TRAFFIC Europe, TRAFFIC East/Southern Africa

Inclusion of Cuvier's Gazelle *Gazella cuvieri* in Appendix I.

Proponent: Algeria.

Summary: *Gazella cuvieri,* Cuvier's Gazelle, is a medium-sized gazelle, occurring in the hills and low mountains of the Atlas and neighbouring ranges in Morocco, Algeria and Tunisia and in Western Sahara. It is one of a number of similar species of gazelle that occur widely in northern Africa and the drier parts of Asia.

Cuvier's Gazelle was assessed by IUCN as Endangered in 1996 on the basis that the total population numbered below 2 500 mature individuals and was declining. Since then, some sub-populations have reportedly stabilised, some are reported to be increasing and additional populations have also been discovered in Morocco; the overall population is now believed to be in the region of 3 000. The species still occurs through much of its historical range, but generally in small scattered populations. It has been affected by habitat loss and fragmentation through transformation of wooded zones into pastures and cropland. Additional effects on populations include poaching, forest fires and predation by dogs near inhabited areas. However, unlike *Gazella dorcas* and *Gazella leptoceros* (see Analyses to Proposals 11 and 12) this species does not seem to be affected by desert hunting expeditions as it occurs in hilly and mountainous areas where these hunts do not take place. There has been little recorded trade and although direct use reportedly affects the species it is unlikely that there is significant international trade in this species. The species is listed in Appendix I of CMS and was included in CITES Appendix III in 1976 by Tunisia along with three other species, *Gazella dorcas*, *Gazella leptoceros, Gazella gazella*. Apart from *Gazella dama,* which has been included in Appendix I since 1983, no other gazelle species is currently included in the Appendices.

This proposal seeks to include *Gazella cuvieri* in Appendix I.

Analysis: Available information indicates that *Gazella cuvieri* might meet the biological criteria for inclusion in Appendix I in Resolution Conf. 9.24 (Rev. CoP 13). The species still occurs widely, albeit in scattered populations, over an extensive area (40 000–50 000 km^2) and would not therefore appear to have a restricted area of distribution. While populations have undoubtedly shown declines relative to historic levels, there is no evidence that such declines are ongoing. However, current population estimates indicate that the species does have a small population, as suggested by the guidelines in Annex 5 of Resolution Conf. 9.24 (Rev. CoP 13), and that sub-populations are generally small or very small. There is, though, general agreement that the population is stable or increasing, thanks in large part to improved conservation efforts. The species has been recorded in trade in small numbers, almost all as captive-bred specimens, but there is no evidence that international trade has a significant impact on wild populations.

The species resembles other gazelle species that are not included in the Appendices so enforcement of any listing might be problematic.

Supporting Statement (SS)	Additional information
Taxonomy	
Range	
Morocco, Algeria and Tunisia.	*Also found in Western Sahara (IUCN, 1996).*
IUCN Global Category	
	Endangered C2a. (Assessed 1996, Criteria version 2.3)

Supporting Statement (SS)	Additional information

Biological criteria for inclusion in Appendix I

A) Small wild population

(i) Population or habitat decline; (ii) small sub-populations; (iii) one sub-population; (iv) large population fluctuations; (v) high vulnerability

In 1991, De Smet estimated the stock of Cuvier's Gazelle in Algeria at 560 individuals. In 2005–2006 the [Algerian] population was estimated at 500 individuals. Population numbers remain more or less stable over time. The Cuvier's Gazelle populations in Algeria are the largest in the world.	*Estimated total numbers in 2001 were 1 500–2 500 (Mallon and Kingswood, 2001), although current estimates are somewhat higher.* ***Algeria**: 560 (De Smet, 1991).* ***Morocco**: Estimated at around 2 000 by Cuzin (2007); earlier estimates were of 600–1 500 (Aulagnier* et al.*, 2001 and Cuzin 1996, 2003).* *Numbers appear to be stable or increasing in Morocco, as two populations are obviously increasing (Cuzin, 2007*). *Chardonnet* (2007) *reports that recent investigations in Morocco have revealed formerly overlooked* G. cuvieri *populations and ranges. Increases in population figures may be a result of newly discovered populations rather than an increase in conservation status.* ***Tunisia**: 300–500 (Kacem* et al., *1994; Smith* et al. *2001).* *Following implementation of protection measures, the Tunisian population has increased and expanded since the 1970s (Mallon, 2007). Chardonnet (2007) notes that the population has tended to increase in protected areas and to remain stable or to decrease outside them. Surveys in Tunisia have taken place in 2006–2007 but are not yet published (Beudels, 2007).* *The species has a high potential rate of population increase: females may reportedly first breed at 26 or 27 weeks, giving birth at 70 weeks (Olmedo* et al., 1985; *Sellami and Bouredjli, 1991). Thereafter they may breed twice a year and, in captivity at least, show a high rate of twinning (40% of births) (Ibid.).*

B) Restricted area of distribution

(i) Fragmented or localised population; (ii) large fluctuations in distribution or sub-populations; (iii) high vulnerability; (iv) decrease in distribution, population, area or quality of habitat, or recruitment

Disappeared from a large part of the "Atlas Tellien" towards the East of Algeria.	*The range of the species extends throughout the mountainous parts of North Africa in Algeria, Morocco and Tunisia. Beudels-Jamar* et al. *(2006) note that the general distribution of the species has not changed a great deal in relation to its historical range, but populations are now reportedly fragmented (Beudels-Jamar* et al.*, 2006).* *From the distribution map in Beudels-Jamar* et al. *(2006), the extent of occurrence is in the region of 40 000–50 000 km^2. Within this the species is known from 45–50 locations, although often in small numbers.* *In Morocco the species reportedly disappeared from the lower Seguia El Hamra in the 1930s, and from the Rabat, Casablanca and several localities in the Middle Atlas in the 1960s (Cuzin, 1996 in Lafontaine* et al.*, 2005). However, formerly unknown local populations in Morocco have been "re-"discovered* (*Chardonnet,* 2007). *The species disappeared from the Eastern Rif mountains of Morocco in the seventies, and from Beni*

Supporting Statement (SS)	Additional information
	Snassen in the nineties (Cuzin, 2007).
C) Decline in number of wild individuals **(i) Ongoing or historic decline; (ii) inferred or projected decline**	
	The species was still abundant in Tunisia in 1936 but by the 1970s only survived in the Djebels Chambi and Khchem El Kelb between Kasserine and the Algerian border (Kacem et al*., 1994). It survived in the Dghoumes National Park until 1992 (Beudels-Jamar* et al*., 2006). Following implementation of protection measures the Tunisian population has increased and expanded since the 1970s (Mallon, 2007).* *Populations in Algeria and Morocco appear to be stable or increasing, although increases in Morocco may be attributable to the discovery of hitherto overlooked populations (see above).*
Trade criteria for inclusion in Appendix I	
The species is or may be affected by trade	
None.	*A total of 12 trophies was recorded in CITES Trade Database (1986–2005) with no source recorded, however, none were recorded as exported by accepted range States.* *About 60 captive-bred specimens were recorded in international trade in the CITES Trade Database from USA, Morocco, Germany, Canada and Spain (1987–2005).*
Other information	
Threats	
Poaching and forest fires.	*Direct use and habitat loss through transformation of wooded zones into pastures and cropland (Lafontaine* et al*., 2005) causing habitat fragmentation. Predation of young by dogs where populations are near inhabited areas is thought to be a reason for successful reproduction being rare (Cuzin, 2003).* *Chardonnet (2007) reports that meat of* G. dorcas *is favoured over* G. cuvieri *and therefore direct use is less of a threat to this species.* *Desert hunting expeditions said to affect* G. dorcas *and* G. leptoceros *are less likely to impact* G.cuvieri *in hilly, vegetated areas which are less accessible to vehicles (Mallon*, *2007).*
Conservation, management and legislation	
Listed in Appendix I of the Bonn Convention (CMS).	
Listed in CITES Appendix III by Tunisia in 1976.	
The species is included in Class A of the African Convention requiring authorisation from the highest competent authority to be hunted or collected for scientific purposes or for the interest of the nation.	*Completely protected in its range States. Hunting bans were introduced in 1958 in Morocco, 1966 Tunisia and 1975 in Algeria (Beudels-Jamar* et al*., 2006).*
Considered highly protected in Algeria under Law No 04-07 14th August 2004 and Ordinance no 06-05 of 15th July 2006. Nationally populations in Algeria are managed by the Direction Générale des Forêts and regionally by the Conservation des forêts and by the national parks (Belezma) and nature reserves	*Also found in the Saharan Atlas National Park, Algeria.* *Small populations are currently protected in Morocco. Population in Tunisia currently increasing in protected areas due to successful conservation measures. Species is recolonising parts of its previous range.*

Supporting Statement (SS)	Additional information
(Mergueb nature reserve, Djebel Senalba National Forest) and in Djebel Wahch, Djebel Nadour and Djebel Aissa hunting reserves. A study has just been launched by the Direction Générale des Forêts to develop a management plan for Sahelo-Saharan antelope species. There is a UNDP project to restore the arid zone ecosystems in the Tghit resion and the Mergueb reserve.	*Chambi National Park in Tunisia was created in 1980 and is frequented by Cuvier's Gazelle and hunting reserves have also been designated. Active management measures have been taken in Djebel Khchem el Kelb Reserve including fencing, creation of water holes, provisioning etc. (Beudels-Jamar* et al.*, 2006).* *Enclosures have been created in Morocco although the population was reduced from 40 animals to one animal by jackals, and another one in the High Atlas. Another enclosure is planned in Eastern Morocco (Cuzin, 2007).* *Reintroduction using captive-bred animals has been proposed as a conservation measure (Beudels-Jamar* et al.*, 2006).* *CMS (Convention on Migratory Species) Action Plan has been developed for the conservation of Sahelo-Saharan Antelopes and Range States signed up to the Djerba (1998) and Agadir (2003) Declarations.*
<u>Similar species</u>	
This species shares the same range as the Slender-horned Gazelle (*G. leptoceros*), for example in the *wilaya* of Biskra. This species shares the same range as the Dorcas Gazelle (*G. dorcas*), for example in the *wilaya* of Nâama.	*Taxonomy of gazelles is unstable. Wilson and Reeder (1993), the CITES standard for this group, recognises 16 species. However, the third edition of Wilson and Reeder (2005) has split the genus into three:* Eudorcas, Gazella *and* Nanger *(which includes the Appendix-I listed Dama Gazelle, currently* Gazella dama*). The ten species that are recognised in Gazella under the new revision (including* G. cuvieri*) occur widely in northern Africa and the drier parts of Asia. They resemble each other, often closely and particularly as juveniles (see above). Two of these species (*G. dorcas *– Proposal 11 and* G. leptoceros *– Proposal 12) are proposed at the present meeting for inclusion in Appendix I.* G. gazella *was also included in Appendix III by Tunisia in 1976.* *Ambiguous preliminary genetic results indicating unexpectedly close similarity between samples of* G. cuvieri *and* G. leptoceros *collected in Tunisia, but not between Moroccan* G. cuvieri *and Tunisian* G. leptoceros *(Beudels, Devillers and Cuzin; in press).*
<u>Captive breeding</u>	
There is a project to create a national breeding centre in semi-captivity for Sahelo-Saharan antelope.	*Captive-bred specimens were recorded in international trade in the CITES Trade Database from USA, Morocco, Germany, Canada and Spain.* *ISIS (2007) records six institutions holding specimens of* G. cuvieri*.* *Almeria Park, Spain hold some Cuvieri Gazelle which have reproduced in captivity* (Abáigar and Cano, 2005).

Reviewers:
R. Beudels, P. Chardonnet, F Cuzin, D. Mallon. TRAFFIC Europe, TRAFFIC East/Southern Africa.

Inclusion of Dorcas Gazelle *Gazella dorcas* in Appendix I.

Proponent: Algeria.

Summary: The Dorcas Gazelle G*azella dorcas* is a small gazelle occurring in the arid and sub-arid zones of the Sahelo-Sahara region and in the Near East, with populations recorded in at least 19 countries. It is a widespread and adaptable species, with a relatively high reproductive rate – females may first breed at around nine months, giving birth to one, rarely two, young after a gestation period of around six months. The Dorcas Gazelle is one of a number of similar species of gazelle that occur widely in northern Africa and the drier parts of Asia.

Evidently once very abundant in much of its range, in the past half century populations have declined and the range contracted, particularly in the northern part of its distribution. Although habitat degradation may have some impact, direct exploitation is believed to be the primary factor affecting the species. In particular, motorised desert hunting expeditions, whose main target is the Houbara bustard *Chlamydotis undulata,* are reported to kill significant numbers. Declines in at least some range States, such as Egypt and Algeria, have apparently been very marked (although the population in Algeria may now be increasing). Apart from a recent estimate of 10 000–20 000 in Niger, there is little up-to-date numerical information on the status of populations. In the late 1990s, the population south of the Sahara was estimated as perhaps 35 000–45 000, with much smaller numbers surviving further north. As well as the Niger population, substantial populations are reported as remaining in parts of Chad, Ethiopia and Mali. *Gazella dorcas* was assessed as Vulnerable by IUCN in 2000, and is included in Appendix I of the Convention on Migratory Species (CMS). The species was included in CITES Appendix III in 1976 by Tunisia along with three other species, *Gazella cuvieri* (the subject of Proposal 10), *Gazella gazella* and *Gazella leptoceros* (the subject of Proposal 12). *Gazella dama* has been included in Appendix I since 1983. No other gazelle species is currently included in the CITES Appendices.

Reported trade since 1976 has been in the order of 2 200 live specimens, mainly exported from Sudan to Gulf States. Limited trade in trophies has also been recorded. It is possible that there is additional unreported trade associated with hunting expeditions.

The proponent seeks to include *Gazella dorcas* in Appendix I.

Analysis: The Dorcas Gazelle does not appear to meet the biological criteria for inclusion in Appendix I set out in Resolution Conf. 9.24 (Rev. CoP 13). Its range is not restricted in extent. With recent estimates of 10 000–20 000 in Niger alone, and substantial numbers reported elsewhere, its overall population is not small. The species is believed to be declining but, based on the current IUCN Red List assessment, it seems likely that the rate of decline is below that suggested in the guidelines of Resolution Conf. 9.24 (Rev. CoP 13) as appropriate for inclusion in Appendix I. The species is in international trade, but this is not believed to be a major factor affecting the status of the species.

Supporting Statement (SS)	Additional information
	Taxonomy
	Range
Previously ranged in the whole of Sahelo-Sahara region, the Sinai and the south of Israel (and from the Mediterranean south to the Sahel.) The distribution has been in a slight decline, through fragmentation, in northern Africa since the end of the 19th Century.	*Algeria, Burkina Faso, Chad, Djibouti, Egypt, Eritrea, Ethiopia, Israel, Jordan, Libyan Arab Jamahiriya, Mali, Mauritania, Morocco, Niger, Nigeria?, Senegal [reintroduced], Somalia, Sudan, Tunisia, Western Sahara.* *Previous reports of* G. dorcas *in Yemen are now believed to be* G. saudiya *(Hammond* et al., *2001).*
	IUCN Global Category
	Vulnerable A1a (Assessed 2000, Criteria version 2.3).

Supporting Statement (SS)	Additional information

Biological criteria for inclusion in Appendix I

A) Small wild population

(i) Population or habitat decline; (ii) small sub-populations; (iii) one sub-population; (iv) large population fluctuations; (v) high vulnerability

	East (1999) estimated a total population for Sub-Saharan Africa of 35 000–40 000 animals.
Previously abundant throughout its range but now decimated in most regions and decreasing population in regions where it remains. During the period 2005–2006 the population was estimated at 619 individuals in Algeria.	***Algeria**: surveys in The Ahaggar National Park conducted in 2005 observed 234 individuals (Wacher* et al*., 2005). Algerian population may be increasing in distribution and abundance (De Smet, in Lafontaine* et al*., 2005; East, 1997).*
No longer found in Senegal according to recent information.	***Burkina Faso**: still survived in the late 1980s, no recent information (Lafontaine* et al*., 2006).* ***Chad**: Locally abundant in parts (Wacher* et al*., 2004). More than 4 000 specimens were counted in a two-week survey in a small part of the species' range in central Chad in 2001 (Monfort* et al*., 2004).* ***Egypt**: 1 000–2 000 (East, 1999).* ***Ethiopia**: probably stable and not threatened (East, 1999; Chardonnet easily observed hundreds on the Affar & Issa areas in 2001 (2007)).* ***Libya**: no recent information; extirpated from many areas (Khattabi and Mallon, 1999).* ***Mauritania**: no recent information; largely extirpated and survives only in small numbers in very remote areas (Scholte and Hashim,* in press*)* ***Morocco**: 500–1 500 (Cuzin, 2003).* ***Mali**: 2 000–2 500 (East, 1997); populations may be increasing in distribution and abundance (De Smet, in Lafontaine* et al*., 2005; East, 1997).* ***Niger**: 10 000 and possibly up to 20 000 (Newby, 2007).* ***Nigeria**: possibly extinct.* ***Tunisia**: no population figures, but total number not likely to exceed 1 000, and may be only a few hundred (Smith et al., 1999).* ***Senegal**: no recent information (Scholte and Hashim,* in press). ***Sudan**: common in areas (Lafontaine* et al*., 2006).* *Algerian and Malian populations may be increasing in distribution and abundance (De Smet, in Lafontaine et al., 2005; East 1997).*

B) Restricted area of distribution

(i) Fragmented or localised population; (ii) large fluctuations in distribution or sub-populations; (iii) high vulnerability; (iv) decrease in distribution, population, area or quality of habitat, or recruitment

	The Dorcas Gazelle occurs over an extremely wide area and there is no suggestion that it has a restricted area of distribution.

C) Decline in number of wild individuals

(i) Ongoing or historic decline; (ii) inferred or projected decline

In 1950–1970s, hunting with motorised vehicles and, to a lesser extent, degradation and disappearance of habitat have caused a population decline of around 50%. Around the middle of the 20th Century the species was eliminated from the most important parts of its range and is still threatened by illegal hunting and loss of habitat through grazing.	*Formerly widespread in Morocco in the 1800s and found in large herds (Mallon and Kingswood, 2001).* *In the late 1980s,* G. dorcas *still occurred in all the Sahelo-Saharan range States except Senegal, but its numbers had been substantially reduced, and it was considered threatened or endangered throughout the region with the exception of Niger and Chad, where*

Supporting Statement (SS)	Additional information
	relatively large populations occurred in the Aïr-Ténéré and Wadi Rimé-Wadi Achim reserves, respectively (East, 1999; Scholte and Hashim, in press). G. dorcas *is extensively hunted for consumption and for recreation (Chardonnet, 2007; Mallon, 2007). The formerly large populations of Egypt's western deserts, for example, are believed to have declined catastrophically and in the late 1990s were reported as numbering no more than 1 000-2 000 as a result of the general annihilation of wildlife by foreign hunting expeditions (East, 1999).* *East (1997) noted that hunting and severe drought had severely impacted the Dorcas Gazelle population in northern Mali. More recently it has been observed that the species is still widespread and numerous in Mali, but that the population is probably not increasing (Chardonnet, 2007).*

Trade criteria for inclusion in Appendix I

The species is or may be affected by trade

No information given.	*Reported trade in wild specimens has been mainly from Sudan. Recorded exports between 1992 and 2005 have numbered in the region of 2 200 live specimens and an additional 92 trophies. Trade from Tunisia was in the order of 60 live specimens and trade from Chad of 45 trophies (from CITES Trade Database).* *It is possible that there is additional unreported export associated with foreign hunting expeditions, which reportedly kill large numbers and may return trophies to their home countries (Mallon, 2007).* *Trade recorded in the CITES Trade Database shows Morocco reported a total of 18 captive-bred specimens exported for the zoo trade between 1993 and 1999 with a further 11 captive-bred specimens recorded as personal. A total of 33 have been recorded in trade from Tunisia. Sudan has exported live specimens of captive-bred origin since 1996 with a total of 513 specimens exported to 2005.*

Other information

Threats

Illegal hunting with motorised vehicles, loss of habitat through grazing.	*Over-hunting and habitat degradation are threats to the species (East, 1999).* *Persecution by local communities and militia has been reported. There are reports of mass killing of Dorcas Gazelles and other wild animals by visiting hunting expeditions in parts of Africa, including Algeria, the Sahel, Sudan, Egypt and Morocco (Scholte and Hashim, in press; Cloudsley-Thompson, 1992; Saleh, 1987, 2001; Cuzin, 2003).* *There are no data published on "harvest" by desert hunting expeditions and gathering such information is highly problematic. Hunting expeditions visit officially for falconry for bustards, but each party is constituted of dozens of cars and people, firearms, and gazelles are shot (Beudels* in litt*., 2007).* *Wacher (2007) believed that the relative accessibility of much Dorcas Gazelle habitat made the species particularly vulnerable to human exploitation (Wacher, 2007).*

Supporting Statement (SS)	Additional information
Conservation, management and legislation	
Bonn Convention (CMS): Appendix I, resolution 3,2,4. (1979). Listed in CITES Appendix III by Tunisia, 1976. Considered highly protected in Algeria. Protected under Law No. 04-07 14th August 2004 (Articles 54-58, protected species) and Ordinance No 06-05 15th July 2006. In Algeria the species is managed nationally by the administration in charge of hunting (Direction Générale des forêts) and regionally by National Parks and Forestry Conservation. The species is found in the Belezma National Park, the l'Ahaggar National Park and the Djebel Aissa hunting reserve. There is a UNDP project on restoration and protection of arid zones in the Taghit region.	*Bern Convention Appendix II. (2002)* *The species is included in Class A of the African Convention requiring authorisation from the highest competent authority to be hunted or collected for scientific purposes or for the interest of the nation.* *Hunting banned in 1971 in Djibouti (Kunzel* et al*. 2000; Laurent and Laurent, 2002). Protected areas in Morocco, Algeria, Tunisia, Libya, Egypt, Mauritania, Niger, Chad and Ethiopia hold important populations of the species (Scholte and Hashim, in press).* *Protected by law in various range States.* *Reintroduced to some areas including Libya, Senegal (Khattabi and Mallon, 1999; Scholte and Hashim, in press).* *A CMS (Conservation on Migratory Species) Action Plan has been developed for the conservation of Sahelo-Saharan Antelopes (SSA) and range States signed up to the Djerba (1998) and Agadir (2003) Declarations.* *A CMS-led SSA conservation and restoration programme, co-financed by CMS, FFEM and SCF (Sahara Conservation Fund) is currently underway in seven Range States. New support has been provided by the EU to CMS to help develop Termit TinToumma protected area in Niger (Beudel*s in litt*., 2007).*
Similar species	
	Taxonomy of gazelles is unstable. Wilson and Reeder (1993), the CITES standard for this group, recognises 16 species. However, the third edition of Wilson and Reeder (2005) has split the genus into three: Eudorcas, Gazella *and* Nanger *(which includes the Appendix-I listed Dama Gazelle, currently* Gazella dama*). The ten species that are recognised in Gazella under the new revision (including* G. dorcas*) occur widely in northern Africa and the drier parts of Asia. They resemble each other, often closely and particularly as juveniles (see above). Two of these species (*G. cuvieri *– Proposal 10 and* G. leptoceros *– Proposal 12) are proposed at the present meeting for inclusion in Appendix I.* Gazella gazella *was included in Appendix III by Tunisia in 1976.*
Captive breeding	
The [Algerian] National Agency of Nature manages a reproduction station for *Gazella dorcas*. There is a new project to create a national semi-captive reproduction centre for Sahelo-Saharan antelope.	*Dorcas Gazelles breed well in captivity (Chardonnet, 2007). ISIS (2007) records five institutions with captive specimens of* G. dorcas *(ISIS, 2007).* *Captive-bred specimens started to appear in international trade in 1985 from Tunisia. Sudan has exported live specimens of captive-bred origin since 1996. In Morocco a stock of captive* G. dorcas *has been maintained for many years and many are said to have been exported to zoos (Scholte and Hashim, in press).*
Other comments	
	The survival of Dorcas gazelles, relative to some other congenerics, may be explained by their high fecundity rate, and their ability to make seasonal shifts that allow

Supporting Statement (SS)	Additional information
	them to exploit localised areas with high quality and moisture-rich forage (Scholte and Hashim, in press; *Dragesco-Joffe, 1993; East, 1999).*

Reviewers:
R. Beudels, P. Chardonnet, D. Mallon, P. Scholte, TRAFFIC Europe, TRAFFIC East/Southern Africa, T. Wacher.

Inclusion of Slender-horned Gazelle *Gazella leptoceros* in Appendix I.

Proponent: Algeria.

Summary: The Slender-horned Gazelle *Gazella leptoceros* is a medium-sized gazelle from northern Africa. It is one of a number of similar species of gazelle that occur widely in northern Africa and the drier parts of Asia. The species now appears to occur in two separate areas, one in the Western Desert of Lower Egypt and northeastern Libya, and the other in western and middle parts of the Sahara. The two populations have been placed in different subspecies, although the validity of these is in dispute, and some authorities believe that their separation may be a recent artefact of overhunting and other human pressure leading to range fragmentation. There are few recent population data, but the species is believed to have undergone historic population declines and range contractions, and it appears to be rare throughout its range. An assessment of African antelopes in the late 1990s concluded that the global population of this species could be as low as a few hundred and was unlikely to exceed a few thousand. A survey in Tunisia in 2006 confirmed that the Slender-horned Gazelle was still present throughout the Tunisian part of the Great Oriental Erg from Djebil National Park to Senghar National Park, but densities were probably very low and the population in the country was thought likely to number only a few hundred individuals. A 2007 reconnaissance survey along the northern margin of the Erg Occidental in central Algeria provided confirmation of their presence in at least three separate locations in the eastern central and western zones of this very large area, indicating a large contemporary distribution in this habitat; no assessment of relative abundance was made. There is no information on current numbers in Libya or in countries on the southern side of the Sahara.

Direct exploitation is believed to be the primary threat to the species. In particular, motorised desert hunting expeditions, whose main target is the Houbara bustard *Chlamydotis undulata*, are reported to kill significant numbers of gazelles, including the Slender-horned Gazelle. The species may also have been affected by habitat degradation. *Gazella leptoceros* was assessed as Endangered by IUCN in 1996, having previously been assessed as Vulnerable, and is included in Appendix I of the Convention on Migratory Species (CMS). The species was included in CITES Appendix III in 1976 by Tunisia along with three other species, *Gazella cuvieri* (the subject of Proposal 10), *Gazella dorcas* (the subject of Proposal 11) and *Gazella gazella*. *Gazella dama* has been included in Appendix I since 1983. No other gazelle species is currently included in the Appendices.

Trade in *G. leptoceros* has been observed. Small numbers of captive-bred live specimens have been recorded in trade. Adult Slender-horned Gazelles were observed in the mid 1990s in Saudi Arabia and it has been reported that recent imports declared as Dorcas Gazelle have included *G. leptoceros*. It is possible that there may be some undeclared trade in trophies collected by desert hunting expeditions.

The proponent seeks to include *Gazella leptoceros* in Appendix I, although there is some ambiguity in intent: the proposal itself names the taxon as *Gazella leptoceros,* while the supporting statement refers under taxonomy and in the remainder of the text to the subspecies *G. l. loderi*. This analysis treats the taxon as a whole.

Analysis: There are few recent population data for the Slender-horned Gazelle. However, in the late 1990s the global population was considered unlikely to exceed a few thousand. It is known to have declined in abundance historically, and to be subject to hunting, and it is thought that the population is likely still to be declining. Given this and the scarcity of recent sightings over its extensive range, the species may meet the biological criteria for inclusion in Appendix I on the basis of a small and declining population, following the guidelines in Resolution Conf. 9.24 (Rev. CoP 13). The species is known to have been in international trade, although in recent years declared trade has been exclusively in captive-bred specimens. It is possible that there is some undeclared trade in trophy specimens. The species may therefore be affected by trade and therefore meet the trade criteria for inclusion in Appendix I.

The species resembles other gazelle species that are not included in the Appendices so that enforcement might be problematic.

Supporting Statement (SS)	Additional information
Taxonomy	
Proposal itself refers to *Gazella leptoceros*; taxonomy within SS and text of SS refer to *Gazella leptoceros loderi.*	*Two sub-species (*G. leptoceros leptoceros *and* G. l. loderi) *have been named on the basis of phenotypic variation but not yet substantiated by genetic analysis. The IUCN/SSC Antelope Specialist Group does not recognise any subspecies.*
Range	
Endemic to North Africa. The current centre of distribution in North Africa is the	*Algeria, Chad, Egypt, Libyan Arab Jamahiriya, Mali, Niger, Sudan, Tunisia (IUCN, 2006). Possibly Mauritania*

Supporting Statement (SS)	Additional information
Grand Erg Occidental and the Grand Erg Oriental. Distribution extends to the Hamada de Tinrhert in Algeria and to desert areas of Fezzan in Libya and probably in Mali in Tanezrouft.	*(UNEP-WCMC Species Database).*
IUCN Global Category	
	Endangered C1+2a (Assessed 1996, Criteria version 2.3).

Biological criteria for inclusion in Appendix I

A) Small wild population

(i) Population or habitat decline; (ii) small sub-populations; (iii) one sub-population; (iv) large population fluctuations; (v) high vulnerability

Gazella leptoceros loderi is present in Algeria, Tunisia and Libya.	*East (1999) estimated that the total population could be as low as a few hundred and was unlikely to exceed a few thousand.*
Present in Tunisia, in the Great Eastern Erg. Its numbers there are unknown, but are probably low.	*Recent surveys in Tunisia (CMS, Jan–Feb and April–May 2006) confirm that the Slender-horned Gazelle is still present throughout the Tunisian part of the Great Oriental Erg from Djebil National Park to Senghar National Park, but that densities are probably very low (Wacher, 2006; Beudels, 2007). Evidence of poaching and disturbance is high. Observations suggest it is possible the Tunisian population may number a few hundred individuals (Devillers* et al*., 2006), but more data are needed to verify this (Wacher, 2006).*
It appears to have been much more abundant in the major ergs (sand/dune seas) of Algeria and Tunisia at the end of the last century [probably end of 19th Century]. Houerou is said not to have seen a single individual in 25 years of vegetation surveys.	*Its current status in Chad, Mali, Niger and Sudan is unclear (Devillers* et al*., 2006).*

B) Restricted area of distribution

(i) Fragmented or localised population; (ii) large fluctuations in distribution or sub-populations; (iii) high vulnerability; (iv) decrease in distribution, population, area or quality of habitat, or recruitment

Threatened species endemic to North Africa.	*A March 2007 reconnaissance along the northern margin of the Erg Occidental in central Algeria provided confirmation of their presence in at least three separate locations in the eastern central and western zones of this very large area, indicating a large contemporary distribution in this habitat, though without opportunity to assess relative abundance (Wacher, 2007).*
"Ergs" comprise the [only] primary habitat of the species.	G. leptoceros *is no longer present in most of its range in the Egyptian Western Desert. Considered extinct in five out of six of its known localities in the eastern part of the Western Desert and very rare or extinct in the last. In other areas of the Western Desert, including Libya, the status is unknown. The habitats of the oases of the Libyan Desert of Egypt have been profoundly modified by agriculture and urbanisation (Goodman* et al., *1986; Devillers* et al*., 2006).*
Disappeared from Morocco.	*Presence has never been confirmed in Morocco, with only one report from that country (Mallon and Kingswood, 2001); Wacher (2006) reports that this is widely believed to have been a misidentified specimen of* G. cuvieri*.*
	There is no quantified estimate of the extent of contraction for the population in the western part of the range for Gazella leptoceros*. However there are indications of decreasing numbers (Devillers* et al*., 2006).*

Supporting Statement (SS)	Additional information
C) Decline in number of wild individuals **(i) Ongoing or historic decline; (ii) inferred or projected decline**	
	At the beginning of the 1980s, Gazella leptoceros leptoceros *only survived in small, widely dispersed groups, especially near uninhabited oases and in the Wadi El Rayan (Saleh, 1987). The numbers which seem to survive in the Egyptian northwest and perhaps in Kharga are certainly very low (Elbadry, 1998) and it has disappeared from most of its former range in Egypt's Western Desert (Saleh, 2001; El Alqamy and Baha El Din, 2006). If there are any populations remaining in Libya they are probably also in a highly reduced and fragmented state (Devillers* et al*., 2006).* *Probably extinct from the Hoggar and Tassili NP (Erg Admer) in Algeria, no observations made for more than 20 years (De Smet, 2007).* *Historical records indicate that the Slender-horned Gazelle was much more abundant in the Algeria-Tunisia Great Ergs at the end of the 19th century and at the beginning of the 20th century than it has been in recent years. Large numbers were found, apparently relatively easily by several naturalists of this period (Sclater and Thomas, 1898; Lavauden, 1926; Heim de Balsac, 1928, 1936) whereas Le Houérou (1986) notes having seen only one throughout 25 years of prospecting for mapping the vegetation of North Africa (Devillers* et al*., 2006).*
Trade criteria for inclusion in Appendix I	
	The species is or may be affected by trade
None.	*In 1990 Spain reported the import of 213 skins from Guinea-Bissau with no source code. Guinea-Bissau is not a range State for this or any species in the* Gazella *genus.* *Small numbers of captive-bred specimens from the USA and Belgium recorded in international trade, mainly for breeding in captivity, scientific or zoo purposes (CITES Trade Database).* *Slender-horned Gazelles have been observed on private property in Riyadh Saudi Arabia in the mid 1990s which were misidentified as Sand Gazelles* G. subgutturosa marica*. On the same property eight individuals were identified (by appearance and subsequent DNA testing) among a recent import of 12 immature gazelles from Tunisia identified as 'Dorcas' gazelles (Wacher, 2007).* *There may be unreported exports by hunters originating outside the range States participating in desert hunting expeditions that are noted as a threat to* G. leptoceros (*Mallon, 2007).*
Other information	
	Threats
Motorised hunting and degradation of the vegetation in the Ergs.	*Eastern populations are directly threatened by human pressure through habitat alteration.* *There is possibly less human pressure on the western population although reported cases of over-exploitation and degradation of erg vegetation are documented (Devillers* et al*., 2006).* *Direct exploitation, both traditional hunting and modern hunting with firearms and motor vehicles, is the primary*

Supporting Statement (SS)	Additional information
	threat to the species (Sclater and Thomas, 1898; Newby, 1990; Cloudsley-Thompson, 1992). *IUCN (2006) cites intrinsic biological factors such as low densities, as a further threat.*
Conservation, management and legislation	
Bonn (CMS) Appendix I. Listed in CITES Appendix III by Tunisia, 1976. Considered highly protected in Algeria. Protected under Law No. 04-07 14th August 2004 (Articles 54-58, protected species) and Ordinance No 06-05 15th July 2006. The species is found in the Hoggar and Tassili des Ajjers National Parks. In Algeria the species is managed nationally by the administration in charge of hunting (Direction Générale des forêts) and regionally by Forest and National Park Conservation. A study has just been launched by the Direction Générale des Forêts to develop a management plan for Sahelo-Saharan antelope species.	*Included in Class A of the African Convention requiring authorisation from the highest competent to be hunted or collected for scientific purposes or for the interest of the nation.* *Totally protected in Algeria, Tunisia, Libya, Egypt and Niger, with no exploitation permitted.* *Djebil National Park (Tunisia) was designated in part for the conservation of this species (Dragesco-Joffe, 1993; Kacem* et al*., 1994); newly established Senghar NP in Great Oriental Erg (Tunisia) for the species (Devillers* et al*., 2006). Known to be present in a NNR in Niger (Poilecot, 1996). May occur in Hoggar and Tassili de Ajjers National Parks (Bousquet, 1992; Devillers* et al*., 2006).* *A CMS (Convention on Migratory Species) Action Plan has been developed for the conservation of Sahelo-Saharan Antelopes and range States signed up to the Djerba (1998) and Agadir (2003) Declarations.*
Similar species	
	Taxonomy of gazelles is unstable. Wilson and Reeder (1993), the CITES standard for this group, recognises 16 species. However, the third edition of Wilson and Reeder (2005) has split the genus into three: Eudorcas, Gazella *and* Nanger *(which includes the Appendix-I listed Dama Gazelle, currently* Gazella dama*). The ten species that are recognised in* Gazella *under the new revision (including* G. leptoceros*) occur widely in northern Africa and the drier parts of Asia. They resemble each other, often closely and particularly as juveniles (see above). Two of these species (*G. cuvieri *– Proposal 10 and* G. dorcas *– Proposal 11) are proposed at the present meeting for inclusion in Appendix I.* Gazella gazella *was listed in Appendix III by Tunisia in 1976.*
Captive breeding	
The National Agency of Nature manages a reproduction station for *Gazella leptoceros*. There is a new project to create a national semi-captive reproduction centre for Sahelo-Saharan antelope.	*The species is present in about 20 collections in North Africa, Europe and North America (Devillers* et al*., 2006). The total number in captivity is <200 all descended from a very small founder base of Tunisian animals (Wacher, 2007). Wacher (2007) reports observing specimens in captivity in Saudi Arabia.* *ISIS (2007) reports 10 institutions with captive specimens and records six births in the last six months.*
Other comments	
	Devillers et al*. (2006) believe that the populations in the Western Desert of Lower Egypt and northeastern Libya (ascribed to* G. l. leptoceros*) and those of the western and middle Sahara (ascribed to* G. l. loderi*) are geographically isolated and ecologically distinct although Mallon (2007) notes that isolation may be a recent artefact of overhunting and other human pressure leading to range fragmentation. Preliminary genetic comparison (mtDNA cyt b) of a small number of*

Supporting Statement (SS)	Additional information
	Egyptian and Tunisian animals did not show large differences and Wacher (2007) reports that Tunisian animals did not show large differences, but the sample size is too small to draw definitive conclusions on relative status.

Reviewers:
R. Beudels, D. Mallon, P. Chardonnet, TRAFFIC Europe, TRAFFIC East/Southern Africa, T. Wacher,

Transfer of the Black Caiman *Melanosuchus niger* population of Brazil from Appendix I to Appendix II.

Proponent: Brazil.

Summary: The Black Caiman *Melanosuchus niger* is widely distributed in the Amazon River Basin, with approximately 80% of its range in Brazil. It occupies a wide diversity of freshwater wetlands and is most abundant in white water rivers of the Basin. The Brazilian Black Caiman population was severely depleted because of overhunting from 1950 to 1970, but as a result of protection it has recovered substantially. In 1982 the Black Caiman was categorised as globally Endangered on the IUCN Red List, but after being re-assessed in 2000, it was listed as of Least Concern. It was included in the first Brazil Red List in 1982, but removed in 2003 based on recent data on densities confirming that it had increased. In 2006 data showed that the Black Caiman still occurs throughout its historic range in Brazil and is locally abundant. That the total wild population in Brazil is in the order of magnitude of millions of individuals (possibly 12–20 million) is supported by the information contained in the proposal and by an additional analysis of survey results provided subsequently. Potential threats include damming for hydroelectric energy, illegal hunting for meat, which is often used for fish bait, and buffalo grazing in cleared areas that could threaten their prey. The significance of these threats is not known and the Black Caiman population evidently continues to increase. The species was included in Appendix I in 1975. In 1995 the population of Ecuador was transferred to Appendix II, subject to a zero annual quota until an annual export quota has been approved by the CITES Secretariat and the IUCN/SSC Crocodile Specialist Group. Since then the only export quotas from Ecuador have been for 30 in 1998 (not taken up) and for 15 live ranched specimens in 2003 (exported from Ecuador to Denmark).

Harvesting Black Caiman on Sustainable Use Reserves is proposed, following requirements of national laws and reserve management plans. Quotas for individual reserves will not exceed 10% of the observed non-hatchling population and will be subject to yearly evaluation of population monitoring indices. Initially, harvesting will take place in Mamirauá Sustainable Development Reserve (SDR) which has a large resident population Black Caiman (currently estimated at 900 000 non-hatchlings). Harvesting systems will concentrate on juvenile males so the impact on population dynamics will be minimal. Experimental harvests of the species were undertaken in Mamirauá SDR in 2004 and 2006 to evaluate the economic potential of sustained management, train local people and evaluate the logistics of the productive chain. It is believed that the existence of a controlled high-value market will increase revenue to local people by adding value for fresh meat and opening the market for skins, which are presently wasted. It is hoped that illegal hunting and trade will be eliminated, and that local people will develop the incentives to value natural systems more and conserve habitats. No export quota is proposed, nor are details provided in the supporting statement regarding procedures for the collection, marking (including compliance with Resolution Conf. 11.12), internal transport control and export control of specimens harvested under the proposed programme. This raises some concerns regarding the adequacy of safeguards against illegal harvest and uncontrolled export from Brazil and possible impacts on the species in adjacent range States where populations are not known to have recovered. However, Brazil has effectively demonstrated implementation of CITES Article IV as well as sufficient enforcement controls in connection with its management of another crocodilian, *Caiman yacare,* for many years.

The proponent seeks to transfer the population of Black Caiman *Melanosuchus niger* of Brazil from Appendix I to Appendix II of CITES, in accordance with Article II, paragraph 2 a) of the Convention and with Resolution Conf. 9.24 (Rev. CoP 13) Annex 4, paragraph A. 2 b).

Analysis: The Brazilian population of Black Caiman does not appear to meet the criteria for inclusion in Appendix I: the population is not small, nor does it have a restricted area of distribution, nor is it declining. The species is in demand for trade, and the proposed transfer from Appendix I to Appendix II is intended to allow for commercial export of skins. According to the supporting statement, the proposed harvest plans will be based on an adaptive management approach, with annual population monitoring used to establish harvest quotas. These are intended to be conservative, and not to exceed 10% of the observed non-hatchling population of the specified management area. It would appear therefore that management of the species will be in accordance with Article IV of the Convention. Brazil's successful *Caiman yacare* management scheme indicates that the country has the capacity to comply satisfactorily with CITES provisions regarding harvest and export of crocodilians.

If adopted, this proposal would result in the *M*. *niger* populations of Brazil and Ecuador being in Appendix II and those of the other six range States being in Appendix I (although Ecuador currently has a zero export quota). This could conceivably create enforcement problems although past problems of this nature with split-listed crocodilian populations have reportedly more or less halted since the crocodilian skin tagging system was introduced at CoP 8.

Supporting Statement (SS)	Additional information
Taxonomy	
Range	
Bolivia, Brazil, Colombia, Ecuador, French Guinea, Guyana, Peru and Suriname. Endemic to the Amazonian River Basin. Around 80% of the range is in Brazil.	
IUCN Global Category	
	Least Concern/conservation dependent (LR/cd) (Assessed 2000, Criteria version 2.3).

Biological criteria for inclusion in Appendix I

A) Small wild population

(i) Population or habitat decline; (ii) small sub-populations; (iii) one sub-population; (iv) large population fluctuations; (v) high vulnerability

According to State Scientific Reports to the Brazilian CITES Scientific Authority presented to an April 2006 workshop in Brazil, the data show that the species still occurs throughout its historic range in Brazil and is considered to be locally abundant. Qualitative assessments in nine states that cover the species' historic range are: highly abundant (1), moderately to highly abundant (3), abundant (3) and moderately abundant (2).

The total population size in Brazil is unknown. An estimate was reached by extrapolations from a 2002 survey of 11 representative lakes in Mamirauá Sustainable Development Reserve, which found an average of 339 Black Caimans per lake. This figure was extrapolated to 908 515 non-hatchling individuals for Mamirauá, which the proponents consider an under-estimate. Further extrapolation of the 2002 survey data to all wetlands in the species' range in Brazil suggests a total population of up to 16 million individuals. No comment is made in the proposal about survey accuracy.

A 2005 survey in four Brazilian States found that large animals were abundant which is typical of populations with no or a low level of exploitation. In 1980, data from confiscated skins indicated a population structure dominated by juveniles, which is indicative of over-exploitation.

IUCN/SSC Crocodile Specialist Group (CSG) reviewers did not dispute that Black Caimans are abundant. Concerns about the extrapolation methodology were addressed by Brazil (CITES Management Authority of Brazil 2006 a,b). The CSG suggests quoting a population range e.g. 12–20 million, rather than a definitive value (Webb, 2006). Concern was raised that different crocodilian species coexist in some wetlands so that it was possible that estimates based on "eyeshine" counts in spotlight surveys were inflated. However, satisfactory clarification was subsequently received from Brazil that the counts were adjusted to take the presence of other species into account (Fischer, 2007; Webb, 2007a,b).

Surveys in 2004 and 2005 in 85 sites in five Brazilian Amazonian States detected 38 711 Black Caimans in 767.3 km of shoreline and at 94% of the surveyed sites, suggesting it is a common species. Estimates varied from 2.1 to 740.5 individuals km^{-1}, which indicates the species is one of the world's most abundant crocodilians (Coutinho et al., 2006). Ross (2007) points out that the surveys were unusually short and may be biased towards high density areas. He considers they stand as individual estimates from specific locations supporting the assertion that the population is 'not small', but are inadequate to indicate status countrywide.

Ross (2007) believes that the total population estimate quoted in the supporting statement is flawed but agrees that there is little doubt that M. niger *is now abundant in Brazil. He notes that the qualitative estimates of "abundant" and "moderately abundant" etc in Table 1 of the SS are given without any indication of what these statements mean. River basins of widely different length and connectivity are lumped into single categories with the same evaluation that is biologically unlikely. The*

Supporting Statement (SS)	Additional information
	second abundance estimate in the proposal is extrapolated from reasonably robust population estimates from a single location. The survey data cover very little of the habitat and do not appear to be directed at the actual areas of proposed harvest. He believes a baseline survey of actual harvest areas is needed.
B) Restricted area of distribution **(i) Fragmented or localised population; (ii) large fluctuations in distribution or sub-populations; (iii) high vulnerability; (iv) decrease in distribution, population, area or quality of habitat, or recruitment**	
Recent data show that the species still occurs widely throughout its historic range in Brazil, see above.	*Ross (2007) considers the data are not compelling as presented but does agree that the species has recovered and is now widespread in Brazil.*
C) Decline in number of wild individuals **(i) Ongoing or historic decline; (ii) inferred or projected decline**	
Black caiman populations were severely depleted in Brazil because of overhunting from 1950 to 1970. Therefore, in 1982, the species was included in the first official list of Brazilian endangered species. In 2003, the Brazilian Red List was revised and the species removed, based on recent data on actual densities, confirming that the Caiman population had increased. Data are given on recent population increases in Mamirauá Reserve. The degree of genetic variability and population structure of the Black Caiman was quantified at 11 localities, including the Brazilian Amazon. The analyses demonstrated that some populations are in a process of demographic expansion. Black Caimans were also found to have high gene diversity, but low nucleotide diversity, showing no indication of significant historical events, such as population fragmentation.	*Black Caiman is reported to have undergone substantial recovery in several parts of its range. Recent surveys suggest that this species remains widespread and the species merits least concern with regard to extinction (Ross, 2000).*

Trade criteria for inclusion in Appendix I

The species is or may be affected by trade	
The proposal details current harvests for meat in domestic trade and reports in early 1990s of some export to adjacent parties. There is currently no legal trade in Black Caiman products. No illegal trade in skins has been reported in Brazil or in the international market since the 1980s.	*The skin is considered high quality and is likely to be desirable in trade (Ross, 2007). Hunting (driven largely by the export trade for skins) peaked during the 1950s, and declined markedly during the 1960s (Thorbjarnarson, 1998). In some areas significant illegal trade in Black Caiman extended into the 1970s (Plotkin* et al*., 1983; Gorzula and Woolford, 1990) and continued to be a problem in some areas in the 1990s (Thorbjarnarson, 1998), even after the species was included in the first official list of Brazilian endangered species in 1982.* *There has been very little legal international trade in Black Caiman. Between 2000 and 2004,exports reported were: one body of one wild individual (from Peru), 15 live captive-bred specimens from zoos (from Ecuador) and 135 scales of ranched specimens traded for scientific purposes (from Ecuador) (CITES Trade Data). According to CITES Trade Data (1995–2004), the following illegal trade was reported in annual reports: two specimens from Ecuador to the USA (1995), 131 specimens from Bolivia to the USA (1997), one skull from an unknown origin (1997), and four leather products from unknown origins (1998–1999).* *The previous trade pattern of selling caiman meat from the western Brazilian Amazon as fish in markets in Colombia is now largely superseded by the use of caiman as bait for catching fish (Thorbjarnarson, 2007).*

Supporting Statement (SS)	Additional information

Precautionary Measures

Management of the species is such that the Conference of the Parties is satisfied with implementation by the range States of the requirements of the Convention, in particular Article IV and appropriate enforcement controls and compliance with the requirements of the Convention (Resolution Conf. 9.24 (Rev. CoP 13) Annex 4)

An experimental harvest of the species, with the permission of the National Wildlife Authority (Brazilian Institute of Environment and Renewable Natural Resources – IBAMA), was undertaken in Mamirauá Sustainable Development Reserve (SDR) in 2004 and 2006. The aims were to evaluate the economic potential of sustained management, train local people and evaluate the logistics of the productive chain. The experimental harvest yielded 42 individuals producing 42 skins and 1.26 tons of meat. Currently, legal harvesting is only permitted in Sustainable Use Reserves within the National Conservation System.

The only management currently proposed is the harvesting of Black Caiman on Sustainable Use Reserves, following requirements of national laws and reserve management plans. Initially, harvesting will take place in Mamirauá SDR where the estimated population size of non-hatchling individuals exceeds 900 000. The reserve's 2006 quota has been set at only 695 individuals. Quotas for individual reserves will not exceed 10% of the observed non-hatchling population. According to the proponent, quotas will actually be approximately 5–7% of the total population of the reserves because the spotlight surveys give an underestimate of the population. All quotas will be subject to yearly evaluation of population monitoring indices, as defined in reserves' management plans. With time the proponents expect the quota to be increased according to experience gained and market opportunities. This harvesting system is concentrated on juvenile males so the impact on population dynamics is minimal as shown by experimental harvesting in the Mamirauá SDR. By taking an adaptive management approach, standard population surveys and other monitoring techniques such as catch-per-unit-effort, will be used to assess management impact on Black Caiman populations.

All participants in Black Caiman management have to register in a national database; obtain an environmental licence, and submit annual reports. All measures are controlled by IBAMA, with the support of range States that are responsible for issuing annual licences for harvesting and transport of and trade in products and sub-products. All skins have to be tagged according to CITES Res. Conf. 11.12.

One of the goals of this proposal is to eliminate illegal trade, adding value and additional incentives to the legal production. The proponents note that local people involved in legal trade will be the most interested in eliminating illegal trade.

The potential effect of legal trade, already seen in Mamirauá Reserve, is to reduce the intensity of hunting and increase revenue to local people by adding value for fresh meat and opening the market for skins, which are presently wasted. The existence of a controlled high-value market will also increase the value of natural systems for local people and promote habitat conservation.

The suggested quota for 2006 was less than 1% of the estimated population size of 900 000 non-hatchlings in Mamirauá SDR.

The CITES Management Authority for Brazil (2006a) states that it is very unlikely that extraction will reach 1% of the total non-hatchling population size, and notes that populations in the many national parks within its Brazilian range will never be exploited.

The Crocodile Specialist Group has stated: 'There appears little doubt that Brazil's Black Caiman population has recovered sufficiently to allow for a sustainable harvest programme, and that the population is large' (Webb, 2006; Jelden, 2007) and. Ross (2007) agrees.

At the 22nd CITES Animals Committee meeting (AC22) Brazil noted that Black Caiman populations are found far from borders, reducing the risk of illegal trade from neighbouring countries (Anon., 2006). Ross (2007) asks about the risk of transport to neighbouring countries e.g. by river transport.

Verdade (2007) notes that the plan is to harvest in bigger rivers where mostly males congregate (more than 90%), whilst females stay in the neighbouring lakes.

SS does not provide details of procedures for the collection, marking, internal transport control and export control of specimens harvested under the proposed programme, including reference to the type and source of tags that will be used to fulfil Resolution Conf. 11.12. Without such controls there is the possibility of illegal harvest and uncontrolled export from Brazil, and illegal harvest of caiman in neighbouring range States being laundered through Brazil. (Ross, 2007).

Jelden (2007) notes that Brazil has demonstrated sufficient enforcement controls with its Caiman yacare *management scheme over many years, indicating that the country has the capacity to comply satisfactorily with CITES provisions regarding consumptive use management schemes for crocodilians*

Supporting Statement (SS)	Additional information
Opening international markets will increase the return per animal harvested, making legal management a more lucrative option than the currently wasteful illegal practices. There is little potential for an increase of illegal hunting due to the opening of international markets because it is much easier to control international trade than the clandestine local market.	

Other information

Threats

Black Caiman may be threatened by damming for hydroelectric energy and poaching. Buffalo grazing in cleared areas could threaten the species' prey. Deforestation around major white water rivers (favoured Black Caiman habitat) is considered a potential threat. In some extreme cases local communities have destroyed nests to try to slow population growth as a result of increased attacks on humans (no reference). In the 1990s there was a large domestic illegal trade in Black Caiman meat from Mamirauá SDR, especially for markets in Para State, Brazil, and also in Colombia (see above); in 1995 an estimated 65 tons of caiman meat was sold. The market in this region was drastically reduced in 2000 because of increased enforcement associated with preparation for the legal harvest in the reserve. However the illegal trade in salted meat continues along the lower Amazon river to supply markets in Para State. An estimated 50 tons of salted meat from approximately 5 115 individuals was harvested in 2005. Salted meat is of low value; many individuals are killed for fish bait and do not enter trade. There is a small local market for parts of the species usually from animals captured for other reasons. Teeth and skulls are occasionally used for arts and crafts and oil is used as medicine. Eggs are consumed locally in some communities.	*The significance of each of the potential threats mentioned in the proposal are not elaborated.* *Da Silveira and Thorbjarnarson (1999) carried out a study of illegal hunting of Black Caiman in the Mamirauá SDR in the 1990s and found that hunting occurred throughout the reserve. Their information suggested that the annual harvest is approximately 115 tonnes of fresh caiman meat, representing 5 230 Black Caiman and 2 865 Spectacled Caiman* Caiman crocodilus*. Despite this illegal hunting, the population of Black Caiman had one of the highest reported densities for Amazonia. They suggested that the impact on wild populations may be reduced because the hunters take mostly adult and subadult males, from relatively accessible parts of the reserve. They also suggested that this illegal hunting in the Mamirauá reserve illustrated that a sustained harvest of caiman populations may be possible under the right conditions.* *The use of Black Caiman meat to capture fish was first recorded only recently, in 2000, although the practice was considered widespread in the Brazilian Amazon in 2001. The caimans are used to capture a catfish, Piracatinga* Calophysus macropterus. An *IBAMA project that monitored fishery landings in towns along the Amazon recorded 140 tons of Piracatinga from May to December 2001. As one kilogram of caiman is estimated to yield one kilogram of Piracatinga, it is likely that some 140 tons of Black Caiman were used in this fishery during that period. A kilogram of eviscerated Piracatinga is sold by the fishermen for R$0.6–0.7 (=US$0.17–0.20 per kg). In this same place, a kilogram of salted/dried caiman meat was sold at US$0.70–0.90 during the 1990s. This is considered a wasteful use of caiman (Da Silveira and Viana, 2003).* *The sale of caiman meat for human consumption occurs for cultural reasons, principally in the lower Amazon (Para State).*

Conservation, management and legislation

The proposal lists the national and international laws and conventions relating to the commercial use of Black Caimans in Brazil although details of what they specify are not given.	

Similar species

The entire species has been listed in CITES Appendix I since 1975. The population of Ecuador was transferred to Appendix II in 1995, and is subject to a zero annual export quota, until an annual export quota has been approved by the CITES Secretariat and the IUCN/SSC Crocodile Specialist Group. Quotas have only been	*Black Caiman is an 'easily recognisable' species for enforcement authorities (Anon., 1995). However if adopted, Brazil's proposal would result in split-listing of populations of* M. niger *in two different Appendices of CITES. Discussions held at the 18th CSG working meeting in 2006 showed that all range States are in*

Supporting Statement (SS)	Additional information
approved in 1998 (for 30 specimens, not taken up) and in 2003 for 15 live ranched specimens in 2003 (exported from Ecuador to Denmark).	*support of Brazil's proposal. A split-listing should not have any implications with regard to any enforcement problems. The CSG has monitored carefully over nearly 20 years the international trade of crocodilians world-wide including the trade from many split-listed species. Because of the extremely successful crocodilian skin tagging system introduced by CITES at COP 8, enforcement problems associated with illicit international trade have come more or less to a halt including in the past enforcement problems with split-listed crocodilian populations (Jelden, 2007).* *TRAFFIC South America (2007) notes that small or medium-sized skins, once they are tanned, might prove difficult to distinguish from other caiman species for a non-trained inspector.*
Captive breeding	
Captive breeding is permitted under Brazilian legislation, but there are presently no proposals for this form of management for Black Caimans.	*Dollinger (2007) notes that the global* ex-situ *population in WAZA-registered zoos is very small, suggesting little interest by zoological gardens in the species.*

Reviewers:
D. Jelden, J.P. Ross, J.Thorbjarnarson, TRAFFIC South America, G. Webb

Transfer of the Beaded Lizard subspecies *Heloderma horridum charlesbogerti* from Appendix II to Appendix I.

Proponent: Guatemala.

Summary: *Heloderma horridum charlesbogerti* is a subspecies of the Beaded Lizard, a large, venomous lizard that occurs in Mexico and Guatemala. *H. h. charlesbogerti* is endemic to the Motagua Valley in eastern Guatemala, where it is restricted to small, dispersed patches of forest in semi-arid areas. The species *Heloderma horridum* was categorised as Vulnerable in the IUCN Red List in 1996. The range of the subspecies has been reduced to 24 000 ha and its wild population is currently estimated at between 170 and 250 individuals. It is regarded as threatened with extinction due to loss of its habitat, collection for local and foreign collectors, the effects of hurricanes, and persecution by local people who are afraid of it because of its poisonous nature. A National Conservation Strategy has been developed which will attempt to counteract the threats. The subspecies has apparently been traded, both nationally and internationally and, although the numbers are small, they are significant in relation to the total population. Collection and trade in this subspecies is illegal in Guatemala. There are four subspecies of *Heloderma horridum*, and *H. h. charlesbogerti* differs from the others in various details of morphology and colouration, making it relatively easy to distinguish live animals when adult, although juveniles are said to be difficult to tell apart. *H. suspectum*, the only other species in the genus, is very distinct. Captive breeding has so far been very unsuccessful, despite many attempts. *Heloderma* species have been included in Appendix II since 1975.

The proposal seeks to transfer the population of the subspecies of *Heloderma horridum charlesbogerti* from Appendix II to Appendix I, in accordance with criteria A i), ii) and v), B i), ii), iii), and iv), C ii) of Resolution Conf. 9.24 (Rev. CoP 13) Annex 1.

Analysis: *Heloderma horridum charlesbogerti* appears to meet the biological criteria for listing in Appendix I. Its habitat has been severely reduced; it is restricted to dispersed patches of forest; the population is very small and localised and a population decline can be inferred from the difficulty in finding the species currently, compared with the 1980s. The subspecies has apparently been recorded in trade, although since 2000 only one specimen of *Heloderma horridum* has been recorded as exported from Guatemala, the subspecific identity of which is not recorded.

Resolution Conf. 9.24 (Rev. CoP 13) states that split-listing of species in the Appendices should be avoided if possible, and that when split-listing does occur, this should generally be on the basis of national or regional populations, rather than subspecies. It also states that taxonomic names below the species level should not be used in the Appendices unless the taxon in question is highly distinctive and the use of the name would not give rise to enforcement problems.

It appears that only adults of this subspecies are readily distinguishable from other subspecies. Identification of juveniles, which is the main stage that is traded, would be problematic.

Supporting Statement (SS)	Additional information
Taxonomy	
Range	
Guatemala.	
IUCN Global Category	
The species *Heloderma horridum* is listed as Vulnerable A2cd.	*Assessed in 1996, Criteria version 2.3.*

Supporting Statement (SS)	Additional information
Biological criteria for inclusion in Appendix I	
A) Small wild population **(i) Population or habitat decline; (ii) small sub-populations; (iii) one sub-population; (iv) large population fluctuations; (v) high vulnerability**	
Although population data prior to 1998 are not available it is suggested that the population has declined because it is far more difficult to find individuals than it was in the 1980s. The total number of individuals is only between 170 and 250. Its area of habitat has been reduced to only 56% of the original and is mostly highly degraded; (ii) it is reduced to dispersed patches of forest; (v) it is highly vulnerable to the effects of flooding caused by hurricanes.	*Anon. (2006) noted that, even since June 2002, when studies on the subspecies began, its distribution and available habitat have diminished drastically.*
B) Restricted area of distribution **(i) Fragmented or localized population; (ii) large fluctuations in distribution or sub-populations; (iii) high vulnerability; (iv) decrease in distribution, population, area or quality of habitat, or recruitment**	
The population is localised and probably restricted to 24 000 ha in the Motagua Valley and, within this area, it occurs in small dispersed patches; (iii) the current area of distribution is vulnerable to further habitat destruction; (iv) as noted above, its distribution has decreased considerably, including its area of habitat and it is likely that the population has also decreased. The SS indicates that B(ii) is a relevant criterion.	*The subspecies is found in the Valley of the Motagua River and along the adjacent foothills in the eastern region of Guatemala (Beck, 2004).* *Recent studies indicate that current available habitat of the subspecies is approximately 17 000 ha. (Anon, 2006).* *The SS indicates that criterion B (ii) is also relevant but provides no justification for this. The subspecies is so poorly known that no fluctuations in distribution or sub-populations have been documented.*
C) Decline in number of wild individuals **(i) Ongoing or historic decline; (ii) inferred or projected decline**	
The number of wild individuals is inferred to have declined, based on the difficulty of finding them compared with in the 1980s.	*The subspecies was thought to be extinct in the wild until recent field studies located three specimens and subsequently other specimens were located (Anon, 2006).*
Trade criteria for inclusion in Appendix I	
The species is or may be affected by trade	
An estimated 35 individuals were collected illegally in the 1990s for trade to local and foreign collectors. Individuals have been bought from local people by middlemen for US$50 and later sold to foreign collectors for up to US$2 000, due to the high international demand.	*The CITES Trade Database shows that a few tens of individuals of* H. horridum *have been reported as exported from Guatemala to the USA since 1990; there is no indication as to the subspecies involved. Many of the exports were recorded as for scientific purposes.* *Trade in this subspecies is illegal in Guatemala.* *Trade in* Heloderma *species in general is limited, with just under 600 live specimens recorded in the CITES Trade Database in the period 1996–2005. Of these, just under 200 were* H. horridum. *According to the CITES Trade Database and LEMIS database, the most recent export of the species* H. horridum *from Guatemala was in 2000 and consisted of one specimen only. It is not recorded which subspecies this specimen belonged to.* *16 specimens of* H. h. charlesbogerti *are found in zoos in the US and Guatemala (Dollinger, 2007)*.

Supporting Statement (SS)	Additional information
	Most trade in Heloderma *spp. is reportedly in juveniles. No specimens identified as* H. horridum charlesbogerti *have been found offered for sale (TRAFFIC North America, 2007), although specimens of other named subspecies have been (e.g. Anon., 2007a and 2007b; Stollenwerk, 2007; Walter, 2007).*

Other information

Threats

It is threatened by changes in land use, illegal trade of individuals, and systematic extermination by local communities, who fear the animal because of its poison. Another factor is the effect of hurricanes, which can seriously affect the hatching rate of the eggs. During Hurricane Mitch in 1998 vast zones of the arid region were flooded destroying a large percentage of the nests of this subspecies for that year. In addition, the dry forests that they inhabit constitute one of the most threatened ecosystems currently.

The species is locally in demand for collectors of herpetofauna. Ariano estimated that in the Municipality of Cabañas, Zacapa, 30 individuals have been collected in recent years for trade to local and foreign collections.

Conservation, management and legislation

A National Strategy for the Conservation of *H. horridum charlesbogerti* has been developed. This has four important objectives: to implement formal conservation mechanisms in 60% of areas of potential distribution by 2010, and to reverse the increasing rate of habitat conversion for cultivation; to eradicate the illegal collection for trade by 2008, and reduce by 75% the killing of the subspecies by local people, out of fear or ignorance; to strengthen the research and monitoring programme for the subspecies in the wild by 2007; to achieve *ex-situ* reproduction by 2009 of at least one pair in each of the institutions that possess legally acquired specimens, both in Guatemala and abroad.

A total of 934 ha within the range of the subspecies are protected, but this represents only 3% of the extent of its distribution. Various institutions are working to declare new protected areas in the region.

In 1989 a Protected Areas Law was passed to promote the conservation and improvement of the natural heritage, to administer the protected areas, and to co-ordinate information on wild fauna and flora resources and biodiversity. Based on this a List of Threatened Species has been elaborated. The CITES Management Authority (CONAP) has developed capacity-building programmes on wildlife trade procedures and carries out regular checks to enforce documentation requirements for legally acquired wildlife. Monitoring of individuals by radio-telemetry was commenced in 2004 and specimens in national collections and in the wild are being marked with subcutaneous microchips for individual identification.

Since the listing of whole *Heloderma* genus in CITES Appendix II in 1975, collection in Guatemala and international trade from there have been prohibited.

According to a news release by the Center for North American Herpetology (2006), since 2004 when an education campaign was initiated there have apparently been no reports of lizards being killed or sold.

Supporting Statement (SS)	Additional information
Similar species	
The allopatric subspecies *H. h. charlesbogerti* differs from the other three subspecies, one of which, *H. h. alvarezi* also occurs in Guatemala, in various details of morphology and colouration. The only other similar species, *H. suspectum,* also present in Guatemala, is much smaller than *H. horridum*, with a much shorter tail and is mainly orange in colour, as opposed to mainly dark.	*There are two species of* Heloderma*:* H. suspectum *and* H. horridum. *There are four subspecies of* H. horridum*:* H. h*.* horridum, H. h. alvarezi, H. h. exasperatum*,* H. h. charlesbogerti*. The latter two are found in Guatemala (Beck, 2004).* *Subspecies* H. s. suspectum *and* H. s. cintum *are found in the US and Mexico.* *Juvenile* H. h. charlesbogerti *are similar to those of* H*.* h. alvarezi *and* H. h. horridum*. However, adult* H. h*.* charlesbogerti *retain between four and five yellow rings on the tail (Campbell and Vannini, 1998; Beck, 2005).*
Captive breeding	
The subspecies has only been successfully bred in captivity in San Diego Zoo in 2002, where six young have been hatched in 10 years. Nineteen specimens are in captivity in Guatemala.	*Information on breeding in captivity by herpetological enthusiasts published on the internet or elsewhere generally refers to other species or subspecies (e.g. Naumann, 2007; Stollenwerk, 2007). Between nine and 20 captive specimens of this subspecies have been reported in Guatemala (Anon., 2006; Center for North American Herpetology, 2006). In 2006 it was reported that attempts were being made to move these to institutions that were best equipped to house and breed them (Anon., 2006).*
Other comments	
Genetic studies have indicated that *H. h. charlesbogerti* may be distinct enough from the other subspecies to warrant treatment as a separate species but this is still under review.	*This lizard has only been known to science for about 25 years, despite occurring in an area that has been visited frequently by biologists for well over a hundred years. This provides some evidence not only of its secretive nature but also its restricted distribution and rarity (Campbell, 2007).*

Reviewers:
TRAFFIC North America

Inclusion of Porbeagle L*amna nasus* in Appendix II with the following annotation

"The entry into effect of the inclusion of *Lamna nasus* in Appendix II of CITES will be delayed by 18 months to enable Parties to resolve the related technical and administrative issues, such as the possible designation of an additional Management Authority."

Proponent: Germany, on behalf of the European Community States, acting in the interest of the European Community.

Summary: The Porbeagle *Lamna nasus* is a large warm-blooded shark occurring in temperate waters of the North Atlantic and in a circumglobal band in the Southern Hemisphere (30–60°S). While it grows faster than many cold-blooded sharks, the Porbeagle has several life history characteristics that make it highly vulnerable to over-exploitation in fisheries. These include relatively slow growth, late maturation (8–13 years), long life span (26–45 years), large body size (up to 355 cm), small numbers of young (1–5 pups per litter) and long gestation leading to a low intrinsic rate of population increase (5–7% annually). Porbeagles are one of relatively few shark species directly exploited for their meat and there is a well documented history of Porbeagle fisheries that have over-exploited stocks, as well as declines in the amount of reported bycatch in other fisheries. Following the collapse of the Northeast Atlantic Porbeagle fishery in 1960 (with 85–99% declines in landings in 69 years), Norwegian fleets moved to the Northwest Atlantic where the fishery was only sustained for six years before also collapsing. Catch per unit effort of Porbeagle bycatch by pelagic longliners in the Southwest Pacific and Southwest Atlantic may also have declined by between 50% and 95% in 10–20 years. A few fisheries still target Porbeagle in the North Atlantic including 8–11 French vessels which catch 300–400 t per year, and Canadian inshore and offshore vessels which have recently landed only 139–229 t of the 250 t annual quota from the Northwest Atlantic (quota reduced to 185 t in 2006). Assessments of the Northwest Atlantic population indicate it remains at a low level but is relatively stable with a slight decline in females. Only very limited recovery of stocks has occurred despite catch restrictions.

Porbeagle meat is of high quality and high value and is known to be traded internationally, but patterns and trends in international trade are largely unknown due to lack of species-level trade records. Porbeagle fins are of questionable value for the fin trade, but being large are traded internationally and sometimes as a by-product of the meat industry. A large proportion of Porbeagles caught in New Zealand waters are landed as fins and all fins exported for the fin trade. Porbeagle fisheries are managed in only a small portion of their global range, with catch quotas in Canada, USA and New Zealand. While the species is listed on various international conventions, management measures have yet to be introduced. The FAO Committee on Fisheries (COFI) recognised the need to improve management of shark fisheries with the adoption in 1999 of the International Plan of Action for the Conservation and Management of Sharks (IPOA – Sharks), endorsed by the FAO Council in 2000. However, fewer than 20% of the COFI Member States (of which there are over 100) have reported to FAO that they have implemented the IPOA through the drafting of a National Plan of Action (NPOA).

This species is proposed for inclusion in Appendix II under Resolution Conf. 9.24 (Rev. CoP13) Annex 2a criteria A and B because of marked historic and recent population declines based on stock assessments and landings in the North Atlantic. Other stocks have unknown status but are subjected to heavy fishing pressure with little current management in place.

Analysis: Porbeagles are inherently vulnerable to overexploitation owing to a suite of life history characteristics. They have a long history of being caught in unsustainable target and non-target fisheries, with much evidence (from both catch data and stock assessments) demonstrating the impact of fishing on wild populations in the North Atlantic. There is undoubtedly demand for high value Porbeagle meat and large fins, and the species is traded internationally. Because of the lack of species-specific data, the exact scale of this international trade is unknown, meaning that the relative importance of the trade in observed and predicted declines compared with other factors (chiefly bycatch and harvest for domestic use) is also unknown. It is therefore not possible to conclude with certainty that the species meets the criteria for inclusion in Appendix II. However at least one fishery appears to be driven largely by international demand and it seems likely that such demand is an important contributing factor in other fisheries. (North Atlantic populations at least already appear to meet the biological criteria for inclusion in Appendix I with several recorded marked historical extents of decline to 1–15% of the baseline as well as marked recent declines to 10% within 10 years – these being in accordance with the guidelines recommended for commercially exploited aquatic species).

The listing would require Parties to make non-detriment findings for specimens introduced from the sea.

Supporting Statement (SS)	Additional information

Taxonomy

Scientific synonyms of *Lamna nasus:*
Squalus glaucus; Squalus cornubicus; *Squalus pennanti; Squalus monensis; Squalus cornubiensis; Squalus selanonus; Selanonius walkeri; Lamna punctata; Oxyrhina daekayi; Lamna philippi; Lamna whitleyi*

Range

Occurs largely between latitude 30–60°S, in a circumglobal band in the Southern Hemisphere, and between 30–70°N in the North Atlantic Ocean. North Atlantic populations appear to be well mixed, and distinct from the southern hemisphere populations. It falls within the jurisdiction of 57 countries and overseas territories.

Contrary to information given in SS, independent tagging studies apparently show that the west and east populations in the North Atlantic are separate and undergo little to no exchange (DFO, 2001; Kohler et al*., 2002).*

IUCN Global Category

NE Atlantic – CR
NW Atlantic – EN
Mediterranean – CR
Southern Ocean – NT

Global species assessment Vulnerable A2bd+3d+4bd. (Assessed 2005, Criteria version 3.1).

Southern Ocean population not assessed.

Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP13) Annex 2 a)

A) Trade regulation needed to prevent future inclusion in Appendix I

North Atlantic stocks of Porbeagle have undergone marked long-term and recent declines as evidenced by landings and stock assessments. Marked recent declines in Porbeagle bycatch in the Southwest Pacific may also have occurred. The severe declines in Porbeagle populations and landings are described in detail in the SS and summarised below:

Year	Location	Data	Trend
1936-2005	NE Atlantic (Norway)	L	99% decline from baseline
1936-2005	NE Atlantic (Norway)	C	90% decline from baseline
1936-2005	NE Atlantic (all landings)	L	85% decline from baseline
1978-2005	NE Atlantic (France)	L	50% decline in 30 years
1994-2005	NE Atlantic (France)	L per vessel	70% decline in 10 years
1964-1970	NW Atlantic (Norway)	L	90% decline
1961-2000	NW Atlantic (Norway)	SA	83-89% decline from virgin biomass
1961-1966	NW Atlantic (Canadian)	SA	>50% decline
1961-2004	NW Atlantic (Canadian)	SA	85-88% decline in mature female abundance
1992-2002	SW Pacific (NZ)	CPUE of bycatch	>50-80% decline in 10 years*
1983-1993	SW Atlantic (Uruguay)	CPUE of bycatch	80-90% decline in 10 years*

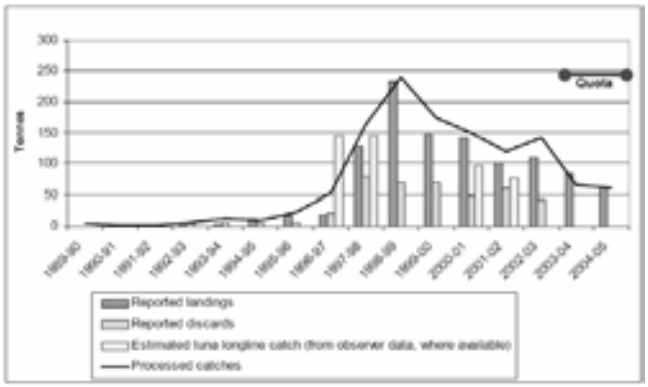
L landings data, C catches, SA stock assessment, CPUE catch per unit effort.
* declines may not reflect stock abundance because of potential sources of variation.

Year	*Location*	*Data*	*Trend*
1983-2000	*SW Atlantic (Uruguay)*	*CPUE of bycatch*	*80-95% decline in 20 years**

(*Domingo* et al., *2002*).

Unsustainable serial depletions of Porbeagle populations have occurred. Following the collapse of the Northeast

Supporting Statement (SS)	Additional information
Atlantic Porbeagle fishery in 1960, Norwegian fleets moved to the Northwest Atlantic where the fishery was only sustained for six years before also collapsing. In 2005 ICES noted that while directed Porbeagle fisheries in the Northeast Atlantic stopped in the 1970s due to very low catch rates, the high market value of the species means that directed fisheries would develop again if abundance increased.	
A few fisheries still target Porbeagle in the North Atlantic including 8–11 French vessels operating in Northeast Atlantic which catch 3-400 t per year and Canadian inshore and offshore vessels which recently landed only 139–229 t of the 250 t annual quota from the Northwest Atlantic (quota reduced to 185 t in 2006). Catch restriction in the Northwest Atlantic fishery since 2002 has maintained a relatively stable population (188 000–191 000 sharks) with slight decline in mature females (currently 9 000–13 000 female spawners) and only very limited recovery from previous over-exploitation.	
There is no stock assessment of the more heavily fished, unmanaged and possibly more seriously depleted Northeast Atlantic and Mediterranean populations or for southern stocks.	*In the Mediterranean, recent records of Porbeagle are very scarce and there is a general lack of information on its status, habitats and fisheries. (Soldo, 2007). Scientific fishery surveys in the Mediterranean reported Porbeagles as part of shark bycatch in tuna and swordfish fisheries (Megalofonou* et al*., 2005). The latest studies from the western Mediterranean area indicate change of practice in the fisheries that now target pelagic sharks but due to limited information it remains unknown if Porbeagle is one of the targeted species (Tudela* et al*., 2005).*
The Porbeagle has virtually disappeared from the Mediterranean; catches of two to three t per year were recorded during the 1970s with observations since then being extremely rare.	
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences	
Porbeagle is or has been subjected to unsustainable target and non-target fisheries in parts of its range, because of international demand for its high value meat (for details of population declines see section A above). Other stocks are likely to experience similar declines unless trade regulations provide an incentive to introduce sustainable management.	*Between 1985 and 1991, imports of shark to Italy consisted of 29% Porbeagle although the country of origin is unclear (Laurenti and Rocco, 1996).*
	Traders in the Netherlands reported Porbeagle among the imported shark species (Rose, 1996).
Findings indicate that the demand for high quality and high value fresh, frozen or processed meat, as well as fins and other products of Porbeagle is sufficiently high to justify the existence of an international market, in addition to national utilisation. However patterns and trends in international trade are largely unknown due to lack of species-level trade records.	*Of US imports of sharks, 40% consist of a group of several species, including Porbeagle, which are imported from Chile, Ecuador, Mexico, Panama, Peru, Surinam, Uruguay, Canada, Portugal, Japan, Philippines, Taiwan (Province of China) (Rose, 1996).*
	According to Kreuzer and Ahmed (1978), preferred species for shark leather production include Porbeagle, however Rose (1996) suggests that Porbeagle leather is unlikely to appear in markets and trade owing to the different processing requirements for leather and meat production.
There are several important but largely unreported bycatch fisheries for Porbeagle in the southern hemisphere including Argentinean longline fisheries for Patagonian toothfish, longline swordfish and tuna fisheries in international waters off the Atlantic coast of South America, and Chilean artisanal and industrial longline swordfish fisheries.	
Unquantified commercial transactions include Canadian exports of meat to the USA and EU, Japanese exports to the EU, and EU exports to the USA.	*Norway exports fresh and frozen Porbeagle meat to EU markets and as by-products of the meat processing, fins are exported to Asian countries (Fleming and Papageorgiou, 1997). A German fish processor also reported exporting Porbeagle as by-products of meat processing (*Ibid*).*
Reported commercial landings, discards and processing of Porbeagle from New Zealand fisheries:	*Of the landings of Porbeagle in New Zealand, 85% were fins (with carcasses discarded at sea) and the remainder headed and gutted (Francis, 2007). Declines in landings are attributed to the demise of the tuna longline fishery (Ibid). Given that virtually all shark fins landed in New*

Supporting Statement (SS)	Additional information
	*Zealand are exported (mainly to Hong Kong SAR), this provides a conservative estimate of the exported volume of Porbeagle from New Zealand (Ibid). It is possible some Porbeagle meat is also exported (Ibid).* *In Uruguay, the shark species with fins of higher export value are shortfin mako (*Isurus oxyrinchus*) and Porbeagle (Domingo, 2000).*
Porbeagle has been identified in the fin trade in Hong Kong SAR. There is some confusion over the value of Porbeagle fins for the fin trade, but their large size nonetheless means they can command relatively high prices. Porbeagles have several life history characteristics that make them highly vulnerable to over-exploitation in fisheries, including relatively slow growth, late maturation (8–13 years), long life span (26–45 years), large body size (up to 355 cm), bearing small numbers of young (1–5 pups per litter), long gestation time (8–9 months), long generation time (20–50 years) and low intrinsic rate of population increase (5–7%). Therefore, Porbeagle should be considered as a species with low productivity (estimated natural mortality of 0.1–0.2). They are also highly migratory and segregate by age, reproductive state and sex, which may increase the vulnerability of certain components of the populations.	

Other information

Threats

The principal threat is from over-exploitation in target and bycatch fisheries, which catch both mature and large juvenile animals, the latter well before maturity.	

Conservation, management and legislation

Porbeagles are listed on: • Annex 1 (Highly Migratory Species) of the UN Convention on the Law of the Sea (UNCLOS); • Annex III (Species whose exploitation is regulated) of the Barcelona Convention Protocol; • Appendix III of the Bern Convention (Mediterranean population only) as a species whose exploitation must be regulated in order to keep it out of danger. No management action has yet followed these listings. The International Plan of Action (IPOA) for the Conservation and Management of Sharks urges all States with shark fisheries to implement conservation and management plans. However, fewer than 20% of the FAO Committee of Fisheries (COFI) Member States (of which there are over 100) have reported to FAO that they have implemented the IPOA through the drafting of a National Plan of Action (NPOA). Porbeagles are designated as Endangered by The Committee on the Status of Endangered Wildlife in Canada and are legally protected in Sweden	*The Mediterranean Action Plan for the Conservation of Cartilaginous Fishes has identified Porbeagle as a species that urgently needs development of a management programme for sustainable fisheries, but the General Fisheries Council for the Mediterranean (GFCM), which is responsible for Mediterranean fisheries, does not appear to have any plans to initiate management of Porbeagle (Soldo, 2007). Consequently, the Porbeagle is not part of any management plan on a national level throughout the Mediterranean (Ibid).*

Supporting Statement (SS)	Additional information
In the Northeast Atlantic, finning of Porbeagles is prohibited by EC Regulation under the European Common Fishery Policy which is binding for EC vessels in all waters and all non-EC vessels in Community waters. In the Northwest Atlantic, the Porbeagle is managed with annual quotas in Canadian waters under the Shark Management Plan (250 t in 2002–2006) and in US waters under the Highly Migratory Species Fisheries Management Plan (92 t). In Australian longline fisheries the possession of shark fins separate from carcasses is prohibited. A small regulated fishery for Porbeagle is permitted by New Zealand under its Quota Management System. There are no management measures applicable to the Antarctic and Southern Ocean Porbeagle populations.	*In Australia a trip limit of 20 sharks is imposed for longline fisheries (TRAFFIC International, 2007).*
Captive breeding	
None known.	
Other comments	
Despite the high value of its meat, trade in Porbeagle is not listed to species, unlike other species such as swordfish, blue finned tuna and spiny dogfish. A method of DNA analysis has been developed to confirm identification of Porbeagle products with a cost of US$20–60 per sample and taking two to seven days. Tests can distinguish between northern and southern stocks, and should soon be capable of identifying population of origin. The entry into effect of the inclusion of Porbeagle on Appendix II of CITES will be delayed by 18 months to enable Parties to resolve the related technical and administrative issues, such as the possible designation of an additional Management Authority.	*Stevens (2007) points out that the lack of species-specific trade code for Porbeagle could make implementation of CITES listing reliant on genetic spot-testing of trade.* *There are likely to be difficulties associated with the identification of some Porbeagle products where they are transported with those of other sharks. It will be necessary to prepare identification guides to differentiate between the most common meat products of Porbeagle and other species.*

Reviewers:
A. Domingo, E. McManus, A. Soldo, J. Stevens, TRAFFIC International.

Inclusion of Spiny Dogfish *Squalus acanthias* in Appendix II with the following annotation

> **"The entry into effect of the inclusion of *Squalus acanthias* in Appendix II of CITES will be delayed by 18 months to enable Parties to resolve the related technical and administrative issues, such as the possible designation of an additional Management Authority."**

Proponent: Germany, on behalf of the European Community Member States, acting in the interest of the European Community.

Summary: The Spiny Dogfish *Squalus acanthias* is a temperate water largely migratory shark of the shelf seas in the northern and southern hemispheres. Despite being naturally abundant, this species is exceptionally vulnerable to over-exploitation due to its long life span (50–100 years), long generation time (25–40 years), relatively large body size (83–200 cm), slow growth rates (2.7–3.3 mm per year for adults) and late age at first maturity (females 12–23 years, males 6–14 years). The Spiny Dogfish is one of the few species of sharks for which there are species-specific trade data. Strong, persistent demand for highly valued Spiny Dogfish meat, primarily from Europe, drives international trade and the targeting of fisheries around the world. There is also international trade in Spiny Dogfish fins and other products. As the Spiny Dogfish is migratory and usually strongly aggregated by age and sex, fishers can maintain catches despite stock depletion and target the most valuable part of the stock (large, pregnant females). Heavily exploited populations become male biased with reduced pup production. Many Spiny Dogfish populations have been severely depleted by fisheries and the species has been characterised by serial depletion around the globe. Spiny Dogfish have undergone marked historic declines in stock abundance and landings in the Northeast Atlantic and Northwest Pacific, and marked recent declines on the Iberian coast, in the Black Sea and Northwest Atlantic populations. Some declines have been severe and have also been very rapid: recruitment failure began after less than ten years targeted exploitation of the Northwest Atlantic population. The few management measures in place for Spiny Dogfish largely lack either a scientific basis or full enforcement and encompass only a limited part of their full range. The FAO Committee on Fisheries (COFI) recognised the need to improve management of shark fisheries with the adoption in 1999 of the International Plan of Action for the Conservation and Management of Sharks (IPOA – Sharks), endorsed by the FAO Council in 2000. However, fewer than 20% of the COFI Member States (of which there are over 100) have reported to FAO that they have implemented the IPOA through the drafting of a National Plan of Action (NPOA). The Spiny Dogfish is listed globally as Vulnerable on the IUCN Red List, and regional populations have been assigned individual listings ranging from Vulnerable to Critically Endangered except for the South African and Australasian populations, which are considered to be of Least Concern.

The Spiny Dogfish is proposed for inclusion in Appendix II under Resolution Conf. 9.24 (Rev. CoP13) Annex 2a criteria A and B because of significant and continuing population declines driven by international trade. The proposed listing would include an annotation to delay entry into effect of the inclusion by 18 months to enable Parties to resolve the related technical and administrative issues.

Analysis: All but two populations of Spiny Dogfish have shown declines in catches and stock abundance driven by strong and persistent demand for high priced meat. Available evidence indicates that a high proportion of harvested Spiny Dogfish enters international trade. The species is also inherently vulnerable owing to a suite of life history characteristics. It seems likely that those Spiny Dogfish populations that remain relatively unexploited are likely to be the focus of expanding fishing pressure in the face of sequential declines in other populations and continuing demand for Spiny Dogfish meat for the international market, as has already been observed in New Zealand and Morocco. It would appear therefore that the Spiny Dogfish meets the criteria for inclusion in CITES Appendix II under Resolution Conf. 9.24 (Rev. CoP13) Annex 2a Criteria A and B.

Supporting Statement (SS)	Additional information
Taxonomy	
Synonyms: 15 synonyms are provided.	

Supporting Statement (SS)	Additional information
Range	
Occurs widely in northern and southern temperate and boreal waters of 7–8°C to 12–15°C. It falls within the jurisdiction of 65 countries and overseas territories. Principal populations in the Northwest and Northeast Atlantic (including Mediterranean and Black Seas), Northeast and Northwest Pacific (including Sea of Japan), South Atlantic and Southeast Pacific off South America, and New Zealand, with smaller populations off South Africa and southern Australia.	
IUCN Global Category	
Mediterranean – EN Black Sea – VU Northeast Atlantic – CR Northwest Atlantic – EN Northwest Pacific – EN Northeast Pacific – VU South America – VU South Africa – LC Australasia – LC	*Globally: Vulnerable A2bd+3bd+4bd (Assessed 2006, Criteria version 3.1).*

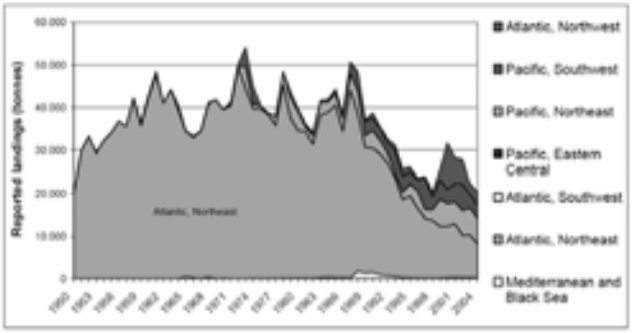
Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP13) Annex 2 a)

A) Trade regulation needed to prevent future inclusion in Appendix I

Stocks of this low productivity shark (natural mortality 0.1) in the North Atlantic, Mediterranean, Black Sea and North Pacific have experienced an historical extent of declines to <20% of baseline and rapid recent rates of decline. This meets CITES' guidelines for the application of decline to commercially exploited aquatic species.

Known population trends for northern hemisphere stocks indicate stock declines of from 50% to 95% over periods of from 5 to 50 years, as well as declines of 50% in mean female weight in the NW Atlantic between 1987 and 2002, and recruitment failure in the same region between 1997 and 2003

Landings of Spiny Dogfish reported from FAO fishing areas from 1950 to 2004.



Spiny Dogfish are very rare in the western Mediterranean, but regularly recorded in the eastern basin with no significant recent abundance trends reported. Directed fisheries ceased in the 1970s following abundance declines.
In the Northeast Pacific, former intensive fisheries apparently collapsed in 1910 and in the late 1940s. In British Colombia fishable biomass had been reduced by 75% in 1950. Currently a quota for 15 000 t is in place in Canada, of which 5 000–7 000 t is landed each year and appears to be stable. Washington is the only US Pacific state with directed Spiny Dogfish fisheries, where landings have decreased by >85% by late 1990s.

Spiny Dogfish populations in Australasia and South Africa currently appear to be of favourable status (IUCN, 2006), Lack (2006) stated: "There is no directed fishery for Spiny Dogfish off southern Africa, however, experience suggests that the deteriorating status of stocks elsewhere and the introduction of catch limits in some fisheries, together with continued strong international demand, may drive development of such a fishery."

In 2006, US fishery scientists outlined several reasons for concern about the status of the Atlantic Spiny Dogfish stock, including:

- *Very low recruitment in recent years*
- *Imbalance in the sex ratio of the stock, strongly favouring males*
- *Resulting contraction of overall length range in the population*
- *Declining average size of females, resulting in fewer and smaller pups.*

(Fordham, 2007).

Supporting Statement (SS)	Additional information
Bycatch of Spiny Dogfish in Alaska appears to be stable or increasing.	
Commercial fishing of Spiny Dogfish stocks in South America has recently commenced with associated population declines already taking place in Argentina and Uruguay. In New Zealand, Spiny Dogfish catches are largely stable or increasing with catches remaining below the set quota. Spiny Dogfish are not targeted commercially in South Africa and most bycatch is discarded.	*Abundance of Spiny Dogfish in Uruguay and Argentina was estimated to have declined by 50% in just four years following intensification of fishing effort on other species (Massa* et al*., 2002).*
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences	
The Spiny Dogfish has several life history characteristics that make it particularly vulnerable to over-fishing, including long life span (50–100 years), long generation time (25–40 years), relatively large body size (83–200 cm), slow growth rates (2.7–3.3 mm per year for adults) and late age at first maturity (females 12–23 years, males 6–14 years). These characteristics result in Spiny Dogfish having one of the lowest intrinsic population growth rates for any shark at around 2.3–7% growth per year. Annual natural mortality is around 0.092 in the Northwest Atlantic, or between 0.1–0.3 for very old or young fish in the Northeast Atlantic. Therefore, the Spiny Dogfish should be considered as a species with low productivity.	*US scientists have noted the likelihood that Spiny Dogfish mothers (in the US Atlantic population) are now on average smaller than in previous years and are producing smaller, weaker pups that have lower chances of survival, but these factors have not been considered in the latest population projections (Armstrong, 2006; ASMFC, 2006a).*
The Spiny Dogfish is migratory and usually strongly aggregated by age and sex, making it easy for fishers to maintain catches despite stock depletion and to target the most valuable part of the stock (large, pregnant females). Heavily exploited populations become male biased with associated reduction in pup production.	
Spiny Dogfish are subjected to unsustainable fisheries in several parts of their range (other than North Atlantic, Mediterranean, Black Sea and North Pacific), because of international demand for their high value meat (retail prices range from EUR9–57/kg). Other stocks are likely to experience similar declines unless trade regulations provide an incentive to introduce sustainable management.	*Many Spiny Dogfish populations are severely depleted and the species has been characterised by serial depletion around the globe (Lack, 2006). The depletion of Spiny Dogfish fisheries off Europe in the late 1980s led to development of further fisheries in the USA and Argentina (*Ibid*.). Subsequent declines saw development of fisheries off Canada and New Zealand, with the trend continuing with the emergence of a fishery off Morocco (*Ibid*).*
Between 1995 and 2005, EU Member States (the predominant importers) imported 85 000 t of Spiny Dogfish (fresh, frozen or chilled meat) from non-EU states including USA, Canada, Morocco, Iceland, Norway, Mauritania, Argentina and New Zealand. Total imports of Spiny Dogfish to the EU have declined to 4 900 t in 2005, down from 12 300 t in 1996. Available export statistics indicate that other markets for Spiny Dogfish include China (Hong Kong SAR), Mexico, Thailand, Japan and Australia. No global statistics are available to indicate the total volume of Spiny Dogfish traded globally.	*Spiny Dogfish are consumed domestically in Canada only in small quantities and catches are primarily exported to Europe (Rose, 1996).* *The proportion of global landings that enter the international market is unknown but is likely to be high, as suggested by comparison of landings reported to FAO and imports to EU between 2000 and 2004 (reported in SS); Iceland and Norway exported 64–80% and 88–98% of their reported catches respectively to the EU.*
Spiny Dogfish fins are also known to be traded internationally, however species-specific global import data are not readily available.	*The value of US exports of fresh Spiny Dogfish nearly doubled from 2005 to 2006 (National Marine Fisheries Service Fisheries Statistics and Economics Division, 2007).* *While few export statistics are available to indicate volumes of Spiny Dogfish traded internationally, various reports describe trade routes; from 1990–1994 Spain imported from Portugal, Africa, Central and South America and Asia; from 1985–1991 Italian shark imports came largely from Japan and Argentina – overall Italian shark imports consisted of 38% Spiny Dogfish by weight; Norway exports to European countries and was primary*

Supporting Statement (SS)	Additional information
	supplier to Italy in the 1960s and to UK in the 1970s; South Korea is the major market for New Zealand's Spiny Dogfish; UK imports fresh Spiny Dogfish from the Faeroe Islands; EU import data include imports of around 10 t per year of Spiny Dogfish from Namibia since 2001 (Rose, 1996; Fleming and Papageorgiou, 1997; Lack, 2006). *Despite their small size and individual low value, owing to the large volume of Spiny Dogfish caught in USA and Europe, the fins have been routinely traded for at least the past 10–20 years and may constitute a significant proportion by volume of the shark fins reported in trade (Rose, 1996). Norway and Canada are also known to export Spiny Dogfish fins (*Ibid.*).* *Spiny Dogfish have been used for production of leather and liver oil which is still processed in Norway, primarily for use in the cosmetic industry and as a health supplement, traded at around US$0.6/kg (Rose, 1996).* *Out of 112 range States or countries/territories/entities involved in trade in Spiny Dogfish, only 10 are not Parties to CITES and do not have significant catch and/or trade in this species (Lack, 2006).* *In 2004, 94% of the reported catch in Spiny Dogfish was taken in the fisheries of Canada (38%), the UK (24%), New Zealand (15%), the USA (6%), France (6%) and Norway (5%) (Lack, 2006).*

Other information

Threats

The principal threat is from overexploitation in target and bycatch fisheries.	

Conservation, management and legislation

There are no international legal instruments or management measures in place for the conservation of Spiny Dogfish.	*In 2006, ICES reiterated its advice on setting zero TAC for Spiny Dogfish throughout the Northeast Atlantic.*
The International Plan of Action (IPOA) for the Conservation and Management of Sharks urges all States with shark fisheries to implement conservation and management plans. However, fewer than 20% of the FAO Committee of Fisheries (COFI) Member States (of which there are over 100) have reported to FAO that they have implemented the IPOA through the drafting of a National Plan of Action (NPOA).	
There are some regional management measures in place for Spiny Dogfish which are likely to be of limited value for this migratory species that remains unmanaged elsewhere in its range.	
<u>Northeast Atlantic:</u>	
Since 1988 a TAC (Total Allowable Catch) has been set for Spiny Dogfish in the North Sea which was not based on scientific advice and in recent years has greatly exceeded actual catches despite regular reductions. In 2005, ICES gave the following advice on the Northeast Atlantic stock of Spiny Dogfish stock: "The stock is depleted and may be in danger of collapse. Target fisheries should not be permitted to continue, and bycatch in mixed fisheries should be reduced to the lowest possible level," and advised that the TAC for all areas where Spiny Dogfish are caught be set to zero; the response was a 15% reduction in the North Sea TAC.	*The North Sea TAC also includes the Norwegian Sea (ICES sub area IIa) – in 2006 the total quota was 1 051 t, 90 t of which was allocated to Norway (Lack, 2006).* *In December 2006, the European Council of Ministers set a TAC of 2 828 t for other NE Atlantic Areas (Fordham, 2007).* *In 2006, the Atlantic States Marine Fisheries Commission (ASMFC) adopted a commercial quota 50% higher than NMFS quotas and has allowed individual states to set their own trip limits at several times the*

Supporting Statement (SS)	Additional information
Norwegian Spiny Dogfish fisheries have a minimum landing size aimed at reduced pressure on mature females. In 2006 the Spiny Dogfish was nominated for a second time to be listed on Annex V of the OSPAR Convention (which covers the Northeast Atlantic).	*scientific advice of 50–600 pounds (22–279kg) (ASMFC, 2006b). For example. Massachusetts, Rhode Island and North Carolina allow 2 000 pounds per trip (900 kg) and Virginia allows 4 000 pounds per trip (1800 kg) (Fordham, 2007). These increases were implemented in the interest of reopening directed fisheries (ASMFC, 2006b). The states of Massachusetts and North Carolina have expressed their intent to continue to press for higher Dogfish limits in Federal waters (Fordham, 2007).*
<u>Northwest Atlantic:</u> In Canada, Spiny Dogfish quotas are based on historic levels. In the US, the National Marine Fisheries Service (NMFS) imposes science-based trip limits and quotas for Spiny Dogfish, but federal management measures are not compulsory in state waters and directed fishing has been occurring at unsustainable levels nearshore.	*An assessment of Spiny Dogfish off the US Pacific coast was planned for 2007 but has since been delayed (Fordham, 2007).* *Canadian Northwest Atlantic quotas for Spiny Dogfish have not been reduced despite scientific evidence that they are unsustainable (Fordham, 2007).* *Despite a 1998 state prohibition on commercial shark fishing, Alaska officials are in the process of authorising experimental fisheries for Spiny Dogfish in the absence of a population assessment (Fordham, 2007).*
<u>Northeast Pacific:</u> In the US, federal management began in 2006 with trip limits pending stock assessment and development of quotas (possibly in 2007). In Washington State, Spiny Dogfish are loosely managed within bottomfish management plans, with mesh restrictions and closure of a pupping ground. Spiny Dogfish are included in an "other species" TAC for bycatch in Alaskan fisheries. Canadian quotas for allocated catches and bycatch were capped at historic levels. Investigations are pending to determine current sustainable exploitation levels. Recent landings are only 30–50% of quotas.	*Although USA and Canada conduct cooperative surveys for Northeast Pacific Spiny Dogfish, there is no coordinated, international management of the stock (Camhi, 1999).*
<u>Southern hemisphere:</u> Spiny Dogfish has been included in New Zealand's Quota Management System since 2004. No management occurs in the Northwest Pacific. Population monitoring for Spiny Dogfish is limited by the general lack of species-specific reporting of landings and bycatch in shark fisheries. There are relatively good landings data for a few major fisheries in the North Atlantic, North Pacific and New Zealand. Research programmes are underway in the Northwest Atlantic (Canadian Department of Fisheries and Oceans) and are planned for the Northeast Pacific (in Washington State, NMFS).	*Management of Spiny Dogfish fisheries in New Zealand anticipates the expansion of the Spiny Dogfish fishery to meet European demand for the meat (Fowler* et al*., 2004).* *There is no specific management in place for the Spiny Dogfish in Australia and due to a lack of clarity at the species level in catch data it remains unclear to what extent it may be caught (TRAFFIC International, 2007).*
<u>Captive breeding</u>	
Not economically viable for commercial purposes, due to slow reproductive and growth rates. Possibly some breeding taking place in public aquaria.	
<u>Other comments</u>	
There are likely to be difficulties associated with the identification of some Spiny Dogfish products, where fillets and trunks are marketed and transported with those of other small sharks. It will be necessary to prepare identification guides to differentiate between the most common meat products of Spiny Dogfish and other species. These can readily be backed by the development of genetic identification tools several research laboratories are working on elasmobranch species and stock identification.	

Supporting Statement (SS)	Additional information
The annotation to the proposal provides for the delay by 18 months of the entry into effect of the inclusion of Spiny Dogfish on Appendix II of CITES, to enable Parties to resolve the related technical and administrative issues, such as possible designation of an additional Scientific or Management Authority.	

Reviewers:
S. Fordham, E. McManus, TRAFFIC International

Inclusion of the Sawfish family Pristidae in Appendix I.

Proponent: Kenya and the United States of America.

Summary: The family Pristidae comprises two genera and approximately seven species of cartilaginous rays that are related to sharks and chimeras. Sawfish occur in subtropical and tropical freshwater, marine and coastal habitats to at least 80 m depth and exhibit species differences in their degree of tolerance to freshwater habitats. Their circumtropical distribution is thought to have once been continuous across areas of suitable habitat but is now severely fragmented with virtually all remaining populations believed to be seriously depleted. Two species (*Pristis pristis* and *P. perotteti*) have relatively limited distribution, being confined to coastal waters of the eastern and western Atlantic respectively; the remaining species are widespread, apparently occurring in a number of discrete populations. Sawfish have a suite of life history characteristics that make them extremely vulnerable to over-exploitation including slow growth rate, low fecundity, high age at first maturity and a low intrinsic rate of increase. Principal threats to sawfish are from fishing (formerly targeted in part, but now mostly incidental capture) and habitat degradation and loss. Few quantitative population trends can be determined for most species, however evidence from numerous surveys, field collections and landings data suggest that many sawfish populations have been extirpated or nearly extirpated from large areas of their former ranges, with very few sightings since the 1960s and1970s. Population collapses have been recorded, for example, in Nicaragua and the Philippines, while US populations of *P. pectinata* are estimated to be currently 5% of historic levels. Sawfish have been demonstrated to be highly vulnerable to degradation and disruption of shallow coastal and freshwater habitats, through for example dam building blocking sea access for migration and pollution.

The toothed rostrum of the sawfishes makes them especially prone to accidental entanglement in fishing nets and possibly line gear. Sawfish are exploited for their rostra, fins and meat and are highly prized exhibits in public aquaria. Some past sawfish declines are known to have been largely driven by a lucrative market for meat and fins. Two fisheries are currently known to target sawfish for the international trade in fins and aquarium exhibits, while the majority of captures are incidental due to the very low population abundance. Sawfish fins are regarded as some of the highest quality in the shark fin trade but no studies have focused on identifying them in the trade. International trade in many sawfish products has been documented, for example in US Fish and Wildlife Service import trade data. However data are scarce and insufficient to precisely quantify the levels of international trade. A few species of sawfish are protected in some countries by national legislation, but there is no international management or monitoring of sawfish populations. All the sawfish species are currently listed as Critically Endangered on the IUCN Red List.

The proponent seeks to include all species of the family Pristidae in CITES Appendix I in accordance with Resolution Conf. 9.24 (Rev. CoP13), Annex 1, Criteria A.i); A.v); B.i); B.iii); B.iv) and Criterion C.ii) on the basis that the population is small, has undergone declines and is fragmented due to habitat loss and over-exploitation. Biological characteristics of the species make them particularly vulnerable.

Analysis: There is very little recent information on population sizes or extent of distribution of sawfish species. However, historical data and the extreme scarcity of recent sightings indicate declines in some stocks in some species that are likely to be of the magnitude suggested in the guidelines in Resolution Conf. 9.24 (Rev. CoP13) for inclusion in Appendix I, particularly given the long generation time of sawfishes. Sawfish fins are known to be valuable and to be traded internationally; there is also some trade in sawfish rostra and very limited trade in live specimens for aquaria. However, evidence of targeted fisheries for international trade is limited and the majority of captures are known to be incidental.

Given taxonomic uncertainty regarding the number of sawfish species, the similarity of sawfishes to each other, and the difficulty of distinguishing between parts in trade of different species, enforcement would be problematic if some species were to be included in the Appendices and not others.

Supporting Statement (SS)	Additional information
Taxonomy	
The taxonomy of the sawfishes is currently under scientific review and is likely to require changing in the	Pristis *can be readily grouped by rostral saw morphology into a* pristis *group (*microdon*,* perotteti*, and* pristis*), and a* pectinata *group (*clavata, pectinata

Supporting Statement (SS)	Additional information
future. Currently there are considered to be seven species of sawfish (*Anoxypristis cuspidata, Pristis clavata, P. microdon, P. pectinata, P. perotteti, P. pristis, P. zijsron*), six of which have the following synonyms: ***Anoxypristis cuspidata*** *– Pristis semisagittatus* ***Pristis pristis*** *– Pristis antiquorum, Pristis canalicula* ***Pristis microdon*** *- Pristis leichhardti* ***Pristis pectinata*** *- Pristis waermanni, Pristis granulosa, Pristis serra, Pristis mississippiensis, Pristis acutirostris, Pristis brevirostris, Pristis leptodon, Pristis megalodon, Pristis occa, Pristis annandalei* ***Pristis perotteti*** *- Pristis zephyreus* ***Pristis zijsron*** *– Pristis dubius*	*and* zijsron*), with possibly four to six valid species. Members of the* pristis *group have been reduced to a single wide-ranging species,* P. pristis *by some writers.* P. pectinata *and* P. zijsron *are well-defined morphologically, but* P. clavata *needs detailed comparison with* P. pectinata *(Compagno, 2007).*
Range	
Sawfish are generally tropical marine and estuarine with a circumtropical distribution, which presumably used to be continuous in suitable habitat but is now severely fragmented with remaining populations seriously depleted. On completion of the current taxonomic review of the sawfishes the distribution of individual species may change accordingly. *Anoxypristis cuspidata:* Indo-West Pacific (East Africa to Australia and China). *P. clavata:* Australia. *P. microdon:* euryhaline, Sri Lanka to Australia, freshwater bodies in southern Africa, India and Southeast Asia. *P. pectinata:* wide-ranging but highly disjunct populations in western Atlantic Ocean (Gulf of Mexico and Brazil); eastern Atlantic Ocean; Mediterranean Sea, Indian and Pacific oceans. *P. perotteti:* western Atlantic Ocean (United States of America to Brazil); eastern Pacific Ocean (Mexico to Ecuador). *P. pristis:* eastern Atlantic Ocean (Portugal to Angola) and possibly in the Mediterranean Sea. *P. zijsron:* Indian and western Pacific Oceans (East Africa to Australia).	
IUCN Global Category	
All species of sawfish were listed on the IUCN Red List of Threatened Species in 2006 as Critically Endangered.	

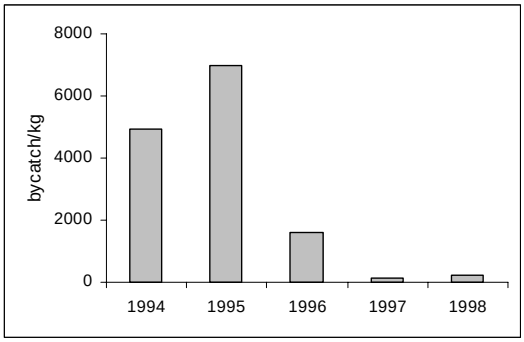
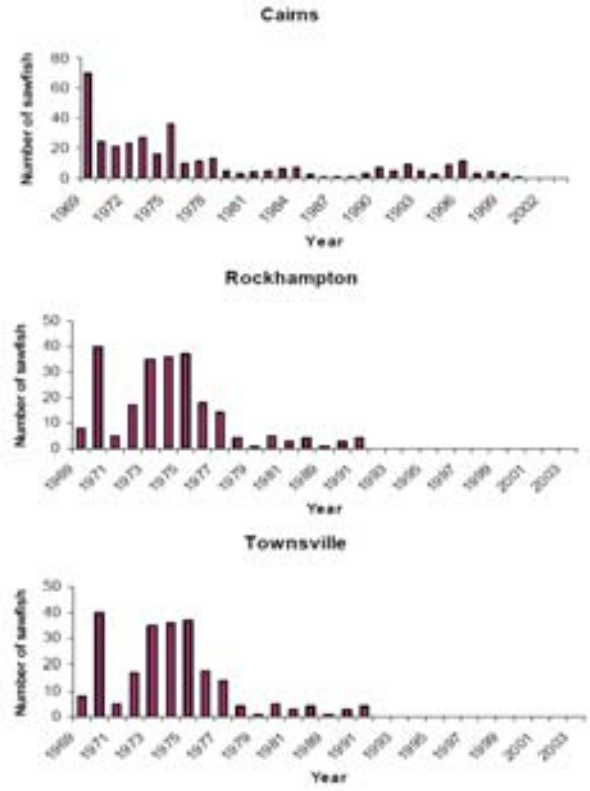
Biological criteria for inclusion in Appendix I

A) Small wild population

(i) Population or habitat decline; (ii) small sub-populations; (iii) one sub-population; (iv) large population fluctuations; (v) high vulnerability

No data are available on number or size of sawfish populations. All known populations are inferred to have severely declined, many extirpated, with no or few observations since the 1960s and 1970s.	*Since data are scarce it is difficult to confirm the current population sizes.*

Supporting Statement (SS)	Additional information
B) Restricted area of distribution **(i) Fragmented or localised population; (ii) large fluctuations in distribution or sub-populations; (iii) high vulnerability; (iv) decrease in distribution, population, area or quality of habitat, or recruitment**	
The distribution of sawfish was presumably once continuous in suitable habitats (near shore marine habitats, estuaries, large rivers, lakes) but is now severely fragmented with many populations extirpated from large parts of their former ranges.	*Given the rarity of current observations of sawfish, it is extremely difficult to determine their precise current area of distribution.*
C) Decline in number of wild individuals **(i) Ongoing or historic decline; (ii) inferred or projected decline**	
Marked declines in population size for sawfish is inferred from (1) decrease in quality of habitat, (2) levels or patterns of exploitation and (3) high vulnerability:	*The extreme K-selected life history strategy of sawfishes suggests that they should exhibit a stable age distribution with little fluctuation in recruitment, hence lack of recent sightings has been cited as evidence of population decline (Musick, 1997).*
(1) The shallow coastal and freshwater habitats of sawfish suffer from degradation or modification which is believed to be an important reason for declines in abundance of sawfish throughout their range. Examples of disruption from declining habitat quality include a) dam building in Lago Bayano, Panama and Rio Dulce, Guatemala which is thought to have blocked sea access for migrating sawfish; and b) extirpation of *P. microdon* from the Fly River System, Papua New Guinea by massive, recurrent cyanide spills from mining operations.	*Anecdotal reports suggest that the numbers of sawfishes landed have decreased considerably in most parts of their range since the 1960s when inexpensive monofilament gill nets became widely available (Fowler, 1997).*
(2) All sawfish populations have undergone serious declines, as demonstrated by a significant reduction in captures (both targeted and as bycatch) or complete disappearance from their original range. The following examples of declining abundance of sawfish were given in the SS:	*According to Roberts and Warren (1994), sawfish are now absent or very rare in the Great Lake of Tonle Sap, Cambodia with the most recent capture 40 years ago which may have been either* P. microdon *or* P. clavata*.*
***P. perotteti, P. pectinata, P. zijsron and P. microdon*:** commonly caught in South African shark beach netting in 1960s; annual catch 0–5 from 1978–2002. Only two specimens caught in last decade.	P. perotetti *used to be caught in "remarkably great numbers" at the mouths of creeks in Gambia (Svenssen, 1933).*
P. perotteti: from 1970–1975 between 60 000 and 100 000 fish were taken from Lake Nicaragua. None were captured in a 1998 survey. Local fishermen reported captures of 4–6 per year in 1998 with no recovery from previous overharvesting. Fishermen in Brazil report declines of sawfish over last 10–15 years.	P. clavata *has declined significantly as a result of bycatch in commercial gillnet and trawl fisheries throughout its limited range and bycatch continues, in commercial and recreational fisheries (Cook* et al*., 2006).*
P. pectinata: US population estimated to be less than 5% of historic levels; east coast populations may have been completely extirpated; bycatch rates in Louisiana trawlers have declined steeply between 1950–1970 from around 40 to less than five fish per trawler (decline to 12.5% of former catch rate in 20 years); Gulf of Mexico population reduced from hundreds of thousands in late 1800s to isolated small populations today.	P. zijsron *was not reported from markets in Eastern Indonesia during 160 visits to 11 markets between Jakarta and Kupang (CSIRO Marine Research, unpublished data reported in Stevens* et al*., 2005).*
P. perotteti* and *P. pectinata: formerly said to be abundant in West Africa but there were no reports in 2004 of sawfish in commercial fish markets of Mauritania and Senegal or in artisanal fisheries across West Africa.	*While there are few quantitative species-specific data on sawfish abundance in Australia, their numbers appear to have declined drastically along the east coast with sawfish now virtually extinct in New South Wales and South East Queensland (Stevens* et al*., 2005). Anecdotal reports from recreational fishers as far north as Townsville suggest that* P. microdon *was once "very common" in the Ross River but over the past 10–15 years has not been recorded (*Ibid*.).*
A. cuspidata: commonly reported in commercial catches in Gulf of Thailand from 1959–1962; in 1993–1996 no sawfish species were seen in 25 commercial fish markets in Thailand, Borneo and Singapore. In	*Reported bycatch of sawfish in Northern Territory, Australia declined from 1994–1999 (NTDPIF, 2000, cited in Pogonoski* et al*., 2002):*

Supporting Statement (SS)	Additional information
southeast Asia currently less than 80% of levels in 1950s; worldwide declines over 50%. ***P. zijsron and P. microdon:*** not observed in Gulf of Thailand in 30–40 years. ***P. pristis:*** believed to have been extirpated from the Mediterranean and eastern Atlantic Ocean. Worldwide landings of sawfish were recorded by FAO between 1962 and 2004, peaking at 1 759 t in 1978, with a strong decline between 1984 and until 1995, since when landings have been sporadically recorded and extremely low. (3) Sawfish are intrinsically vulnerable due to a suite of life history traits that render them highly vulnerable to over-exploitation, including slow growth rate (13.9–19.6 cm per year), low fecundity (mean litter size for *P. perotteti* is 7.3 individuals, with 5 month gestation period), high age at first maturity (10–33 years) and a low intrinsic rate of increase (0.08–0.13 per year for *P. pectinata*, 0.05–0.07 per year for *P. perotetti*) and consequently a high population doubling time (5.4–8.5 years for *P. pectinata* and 10.3–13.6 years for *P. perotteti*). Their natural mortality rate is estimated to be between 0.07 and 0.15 per year and their long tooth-studded saw makes them extremely vulnerable to entanglement in any sort of net gear.	 *The Queensland Shark Program indicates declines in bycatch of sawfish during summer months from 1969–2002 around major Queensland population centres (Cairns, Rockhampton and Townsville), including data from nets and drum lines (data provided by Queensland Department of Primary Industries and Fisheries Service) (Giles* et al.*, 2005):*  *In comparison to the widespread declines and extirpation of sawfish elsewhere, populations of* P. microdon *within Australia, and in particular Western Australia, appear to be relatively healthy and may represent the last stronghold of this species (Stevens* et al.*, 2005).* *Only Brazil (from 1963–1994) and Pakistan (from 1987–1995) reported sawfish landings to FAO, with the vast majority of reported landings coming from Brazil (Anon, 2007a).* *Sawfish are generally large species;* P. pectinata *grow up to 540 cm (Bigelow and Schroeder, 1953) and are estimated to live for 30–60 years (Simpendorfer, 2000). A specimen of* P. perotteti *caught in northern Brazil was 700 cm (total length)*

Supporting Statement (SS)	Additional information
	(Almeida, 1999). Fecundity of P. perotteti *has been observed at 4–10 embryos (Charvet-Almeida, 2007).* P. microdon *has an estimated longevity of 50 years or more (Tanaka, 1991).* *Sawfish populations have collapsed in Laguna de Bay, a large freshwater lake in Luzon Island, Philippines. These declines are due to heavy pollution (from the dumping of untreated sewage and industrial waste), sedimentation from erosion, over-exploitation and massive habitat fragmentation associated with the construction of hundreds of fish pens that largely block access to the ocean (demonstrated by satellite images on Google Earth) (McDavitt, 2007). Evidence for the former abundance of sawfish in Laguna de Bay comes from reports of sawfish in local markets from the late 19th and early 20th centuries (Meyer, 1885; Bowers, 1922). By the 1950s, sawfish populations had declined substantially both in abundance and size (Herre, 1959).* *Despite full protection of sawfish in South Africa since 1997 (and prohibition of spear fishing in KwaZulu-Natal since 1974) there has been no subsequent recovery of populations (van der Elst, 2007). Poor agricultural practices and droughts have impacted on the St Lucia estuarine system, one of the main historic nursery areas for sawfish in South Africa (*Ibid.*). No pups have been recorded here for almost three decades (*Ibid.*).* *Possibly the last and largest population of* P. perotteti *exists in the northern region of South America (probably shared by Brazil, Surinam, French Guyana, Guyana and Venezuela and possibly into Central America) where all size classes are landed (newborn through to adult) (Charvet-Almeida, 2007). Prices of rostra and fins in Brazilian markets have increased; a likely reflection of their increasing rarity (*Ibid.*).* *It has been declared that* P. pristis *is extinct in Ecuador (Aguilar, 2006).*

Trade criteria for inclusion in Appendix I

<u>The species is or may be affected by trade</u>

Sawfish are utilized for their toothed rostra (both whole rostra and detached rostral teeth), fins and meat and are highly prized exhibits in public aquaria. International trade in many sawfish products has been documented but few data are available to quantify the international trade. While there has been some confusion about the issue, the SS provides several sources of information that verify sawfish fins to be regarded as some of the highest quality elasmobranch fin (with high fin needle content), with a long history of international trade (since at least the 1870s). The lucrative market for meat and fins was the primary driving force for the fishery in Lake Nicaragua, which virtually extirpated sawfish from the area with no subsequent recovery. In 1997 Sawfish fins were one of four commonly exported species from Madagascar. Fins from *P. zijsron* were seen for sale in a Chinese shop in Malaysia in 1997, including large specimens offered for approximately EUR 2 300. Common names for sawfish appear on lists of species recognized by	*The SS states there is evidence from some countries that demand for rostra and fins continues to drive sawfish fisheries and that demand for the aquarium trade also drives some fisheries, particularly in northern Australia. However, it is perhaps more accurate to suggest that demand for sawfish products is driving the retention of sawfish in fisheries that capture them incidentally (Simpfendorfer, 2007).* *The few published studies of the international fin trade have focussed on shark species and not the high value batoids in the trade including sawfish (McDavitt, 2007).* *There are two known fisheries that still deliberately target sawfish for the international trade; in Batang Hari River, Indonesia, around 20 animals per year are caught and sold on the international trade for public and private aquaria (Tan and Lim, 1998; Ng and Tan, 1997); Philippine mother ships are reported to target sawfish around Sabah, Malaysia and Chinese fin buyers actively seek out sawfish in fishing villages on*

Supporting Statement (SS)	Additional information
Hong Kong traders. Opportunistic trade in sawfish products has been observed in southeast Asia, Hong Kong SAR, Tanzania, Brazil, Madagascar. An estimated 200 sawfish rostra are traded on eBay per year (an online auction house), worth over US$25 000 and 37% of which represents international trade In one of five major markets that are known to trade sawfish products in Brazil, an estimated 90–180 large and 1 000–1 500 small to medium sawfish rostra are purchased annually by Asian buyers presumably for the curio trade. A Peruvian website offers sawfish rostral teeth for cockfighting on the international market. Rostral teeth find their way into the international cockfighting market from Brazil, where the sport is illegal but it is permitted in several neighbouring countries. Sawfish command high prices in the aquarium trade e.g. juvenile *P. microdon* was imported to Canada from Indonesia priced at US$5 000 per animal. An Australian exporter regularly sells sawfish to public aquaria worldwide. In 2005, various sawfish species were sold for between US$1 650 and US$1 750 per foot. According to the US Fish And Wildlife Service's trade data (USFWS), 163 sawfish rostra and 26 live sawfish were imported to the US over the last five years.	*East Sabah (Almada-Villela, 2002).* *Currently, an Australian exporter is regularly selling a small number of sawfishes to public aquaria worldwide (McDavitt, 2006). Export of these is strictly regulated by Australian legislation (see below).* *Various websites offer sawfish fins and curios for export including in Australia and Bangladesh (Anon, 2007b; Anon, 2007c).* *Much of the sawfish trade on eBay consists of older trophies captured decades ago (McDavitt and Charvet-Almeida, 2004). Despite announcing a ban of sawfish, several sawfish products are still regularly listed on eBay (McDavitt, 2007).* *According to USFWS, 85% of the sawfish entering the USA for the trade in curios from 1997–2001 were imported from Indonesia – the total amount traded is unknown but likely to be small (Grey* et al*., 2005).* *The prohibition on capture of* P. microdon *in US waters means that specimens required for US aquaria must now be sourced from elsewhere (Simpendorfer, 2007).* *According to McDavitt (2007), there seems to be steady global demand for less than ten individual sawfish annually for aquaria.* *In the northern prawn fishery of Australia, an estimated 51 tonnes of sawfish were caught in 1988, with any unbroken saws being sold for the curio trade and fins removed and traded (TRAFFIC Oceania, 1997); it is unclear what proportion of these entered international trade.* *There is a potentially significant market for thousands of sawfish rostra as ceremonial weapons in the folk religion of (Province of China) (Lee, 2004; Kagan and Wasescha, 1982).* *Fishermen in Brazil usually sell rostra to specialised buyers who order them prior to the departure of the fishing boats (Charvet-Almeida, 2002). Rostra are worth up to US$300 depending on their size, are also used as curios, and are probably taken to other regions of the country or exported (*Ibid.*).* *Sawfish are caught by fishing communities in Somalia and are recognised as having the best fin quality in the Berbera and Bosaso fin drying enterprises (van der Elst, 2007). The sale of sawfish rostra (mostly from young animals) is ongoing in Djibouti (*Ibid.*). Fishing communities in Southern Mozambique reported capture of 1–2 individuals per year (*Ibid.*). Sawfish fins obtained from incidental capture in these regions of East Africa are likely to be exported as part of the general shark fin trade (*Ibid.*).* *There are known to be at least 2–3 specialised buyers of sawfish rostral teeth associated with a single fisheries observation point on the north coast of South America (there are likely to be more buyers associated with other fisheries along the coast), with monthly sales of 100–300 teeth to supply cockfighting markets in Peru and elsewhere (Charvet-Almeida, 2007).*

Supporting Statement (SS)	Additional information

Other information

Threats

Principal threats are from fishing (formerly targeted, but now mostly incidental capture) in broad-spectrum fisheries, and habitat loss. Former large-scale fisheries targeting sawfish are no longer cost-effective due to widespread population depletion. Opportunistic capture continues with carcasses retained due to the very high value of their products. Small-scale targeted fisheries continue for public and private aquarium fish trade and possibly for the fin trade.

Opportunistic sale of sawfish products has been observed in Australia, Sri Lanka, Costa Rica, Ecuador, India and the United Arab Emirates (McDavitt, 2007).

Sawfishes have also reportedly been used in production of leather, leather tanning, soapmaking and shark liver oil (Last and Stevens, 1994; Rose, 1996; Hanfee, 1996) but no significant use of sawfish liver oil currently occurs (McDavitt, 2007).

Sawfish leather was regularly traded in the USA from the 1920s through to the 1980s (Ocean Leather Company, 1932; McDavitt, 2007).

Despite the elimination of net fisheries in Florida (formerly the main source of sawfish mortality as bycatch), other factors are still affecting P. pectinata *including plastic marine pollution (including entanglement in fishing lines) and injuries directly caused by humans, highlighting the need to increase education and awareness of the protected status of this species (Seitz and Poulakis, 2006).*

Over the past 10 years in Brazil there have been five requests for fishermen to catch 1–2 juvenile sawfish to supply public aquaria, three of which were successful, with individual sale prices ranging from US$6 000–US$10 000 (Charvet-Almeida, 2007).

Conservation, management and legislation

There is currently no known population monitoring or any form of fishery management for sawfish. There are no national fisheries management plans for sawfish and the UN FAO and Regional Fisheries Bodies do not manage sawfish fisheries or bycatch.

Australia's Commonwealth Environment Protection and Biodiversity Conservation Act (EPBC) lists *P. microdon* as a Protected Species and Vulnerable in Queensland. The Australian Society for Fish Biology (ASFB) assessed *P. clavata* and *P. zijsron* as Endangered and *A. cuspidata* as Vulnerable.

P. pectinata was listed under US Endangered Species Act in 2003 and is the subject of a draft Recovery Plan from the US National Marine Fisheries Service. Habitat of the remnant population of *P. pectinata* in the southeast USA has been protected in the Everglades National Park since 1947.

India's Ministry of Environment and Forests has protected all sawfish species under the Wildlife Protection Act (WPA) since 2001.

The Nicaraguan government imposed a temporary moratorium on targeted fishing for sawfish in Lake Nicaragua in the early 1980s, but a recovery from previous population collapse has not occurred.

All sawfish species are protected in Lake Sentani, West Papua.

Habitat protection in the Everglades National Park has been associated with a slight increase in abundance (3–6% per year) for P. pectinata *between 1989–2002, according to preliminary analysis of data collected by a fisheries monitoring programme based on sport fisher dock-side interviews since 1972 (Schmidt* et al.*, 2000).*

The only legislative protection for sawfish in Australia is for P. microdon *which is listed as Vulnerable under the EPBC act which means that permits are required for activities which may kill, injure, take, trade, keep or move this species in a Commonwealth area and its protection is promoted via conservation advice and recovery plans (TRAFFIC International, 2007). Permitted exports of* P. microdon *for aquarium exhibits are called "Ambassador" agreements (in terms of ambassador species of Australia for display), which allows for the export of a live specimen that has been sourced legally and is not exported for primarily commercial purpose (*Ibid.*).*

P. microdon *is also listed as Potentially Threatened by the ASFB which provides no specific protection (Pogonoski* et al.*, 2002). There are no specific management initiatives in place for sawfish in Australia (Simpendorfer, 2007). Western Australia recently made all sawfish no-take species under its Fish Conservation and Management Act making it illegal for fishers to retain these species (*Ibid.*).*

P. microdon *can be collected in Australian State*

Supporting Statement (SS)	Additional information
	waters (not Commonwealth) under a State permit, with the export permitted under the EPBC Act Regulation 9a1. *Since 1974 spearing of sawfish was prohibited in KwaZulu-Natal and subsequently in 1997 all exploitation, handling or possession of sawfish was prohibited under the Marine Living Resources Act (van der Elst, 2007).* *Capture of* P. pectinata *and* P. perotteti *in Brazil was banned in 2004, when they were listed as critically endangered in the national list of threatened aquatic invertebrates and fish (the Ministério do Meio Ambiente law IN05/2004). According to this regulation, recovery plans should be in place within five years, although such action has yet to be taken (Charvet-Almeida, 2007). A first draft of the Brazilian National Plan of Action for sharks has been submitted by the Sociedade Brasileira Para o Estudo dos Elasmobrânquios and is still under consideration by the government. The NPOA indicates that a ban on sawfish catches and full enforcement of their protected status is crucial for their survival (*Ibid.*).*
Similar species	
The main products entering international trade are the fins, rostral saws and teeth. Fin merchants can identify the fins, but an identification guide or genetic tools would be needed to enable non-experts to distinguish between these and other shark fins. Sawsharks, Order Pristiophoriformes, are superficially similar but smaller (up to 1.5 m) deepwater to coastal sharks that also have a long, flat saw-like snout. Sawshark rostra differ from those of Pristidae species in having a pair of long, string-like ventral barbels in front of the nostrils; close-set rows of small ventral sawteeth as well as small to large lateral sawteeth.	*Sawsharks are not listed in the Appendices*.
Captive breeding	
None.	*Sawfishes are readily kept in public aquaria but so far captive breeding has not occurred although adult* P. zijsron *have lived in captivity for several years (South Africa). Slow growth, great size of adults, and limited availability of sawfish make captive breeding programmes unlikely to impossible for most aquaria (Compagno, 2007).*
Other comments	
	Listing the entire family is appropriate because all species are in steep decline in most places, some species of Pristis *may be difficult to separate from one another, values of whole live animals and parts (especially fins, rostra) are very high, all sawfish figure in international trade, and listing will help combat the inevitable black markets that can and will come from high values of products (Compagno, 2007). Conservation problems may be slightly different in the two sawfish genera, as* Anoxypristis *species are apparently more active and coastal-pelagic than the more benthic* Pristis *species, and hence may be affected by different anthropogenic factors (including different fisheries and gear types) (*Ibid.*). A better understanding of the biology of sawfishes is urgent for most species, yet opportunities*

Supporting Statement (SS)	Additional information
	*for research have become more limited with ongoing declines (*Ibid.*).* *There is no evidence that sawfish represent a significant food resource or reliable income for disadvantaged communities, other than occasional additional income from selling fins or rostra (van der Elst, 2007). Therefore protecting sawfish is unlikely to compromise people's livelihoods (*Ibid.*).*

Reviewers:
P. Charvet-Almeida, L.V.J. Compagno, R. van der Elst, M. McDavitt, C. Simpfendorfer, TRAFFIC International.

Inclusion of the European Eel *Anguilla anguilla* in Appendix II.

Proponent: Germany, on behalf of the European Community Member States, acting in the interest of the European Community.

Summary: European Eels *Anguilla anguilla* are elongated snake-like bony fishes with smooth, slimy skin that are catadromous (spend most of their life in freshwater and descend to the sea to breed) and are generally considered to consist of a single panmictic (freely interbreeding) population. However, genetic studies have suggested some degree of non-random mating and restricted gene flow, and the debate continues over the structure of the stock. European Eels are long-lived (captive-bred eels have lived for 84 years) and females can attain 6 kg and over 100 cm in size while males typically reach about 45 cm. The species undergoes a life cycle encompassing a wide geographical scale and involving long-distance migrations. Spawning has never been observed, however the leaf-like larvae (known as leptocephali) are observed in the Sargasso Sea, east of Bermuda. These larvae drift on the Gulf Stream to the continental shelves of North West Africa and Western Europe after a journey of up to three years (but in some cases less than one year) after which time they metamorphose into eel-like, transparent juveniles called glass eels. Fisheries target these glass eels as they gather in estuaries and wait for the water temperature to reach 10–12^{o}C before entering inland waters. Glass eels first metamorphose into pigmented elvers as they enter estuaries, then become pigmented yellow eels and subsequently spend a growth phase of between three and 25 years in rivers. They undergo a final metamorphosis into silver eels before embarking on a trans-Atlantic migration back to the Sargasso Sea where they spawn and die. Fisheries target silver eels as they leave inland and coastal waters and commence their long-distance journeys. All major life stages (glass eel, silver and yellow eels) are exploited in directed fisheries with an estimated annual catch of 30 000 t caught by approximately 25 000 fishermen.

The latest review of the status of the European Eel was conducted by the Joint European Inland Fisheries Advisory Commission (EIFAC) and International Council of the Exploration of the Sea (ICES) Working Group on Eels in 2006. Scientific consensus supported the view that the species has declined in most of its distribution and is outside safe biological limits. In the mid 1980s, the number of glass eels entering rivers in Western Europe (i.e. recruitment) decreased dramatically to 20% or less of levels observed not more than three generations previously; a figure that is widely agreed on. Recruitment time series from 19 rivers in 12 countries all showed downwards trends in the last 25 years (from both catch data and fishery-independent assessments). Data are lacking to show conclusively whether continental stocks of yellow and silver eels have also declined as much as recruitment and whether the two are linked. Data are also currently too fragmentary to be able to confidently determine the cause of the observed declines in recruitment and landings of European Eel. There is some evidence that the collapse in recruitment may have been caused by declining spawning stock in continental waters, but other data suggest that inland catch declines have been less pronounced and could have been driven by climatic and economic factors. In one study in which 54 catch and fishery-independent stock datasets were assessed, 37% showed significant declines, 7% showed significant increases and 56% showed no clear trends. In addition to overfishing, other anthropogenic impacts might have contributed to the sharp decline in European Eel recruitment, including freshwater and coastal habitat loss, pollution, climate change, blocking of inland migration routes by dams and mortality in hydroelectric turbines. It is also suggested that natural fluctuations in ocean climate may have an important influence on European Eel recruitment.

In response to the widely recognised precarious state of the European Eel population, the European Community has proposed a recovery plan with a target of escapement to sea of at least 40% of silver eels relative to potential escapement under unfished, unpolluted and unobstructed conditions. The aim is to achieve this goal via the establishment of River Basin District-based eel management plans that are due for submission at the end of 2007. Given the many uncertainties in eel biology and management, the continuing precautionary advice of ICES is that stocks should be managed to allow 50% of the potential maximum pristine spawner escapement. There remains lack of clarity regarding the underlying reference status of silver eel biomass.

The meat of European Eels is highly valued in Europe and parts of East Asia, with glass, yellow and silver eels favoured in different regions. International trade of European Eel is high and from Europe consists mainly of live glass eels exported to Asia for rearing in aquaculture. Several other eel species are also traded internationally, mainly fresh, frozen and smoked. Between 1995 and 2005, an estimated half a billion live European glass eels were exported from the EU on average each year to Asia. At the current time, captive breeding of European Eels is not possible and were it to become so, it would take some time for it to become apparent as to whether such technology would transform international markets in glass eels.

Analysis: Available data, supported by scientific consensus from the ICES/EIFAC Working Group, show marked and widespread declines in glass eel recruitment to less than 20% of levels observed up to three generations previously and therefore the taxon may already meet the biological criteria for inclusion in Appendix I set out in Resolution Conf. 9.24 (Rev. CoP13). These declines are not disputed but trends in catches of silver and yellow eels and their relationship to recruitment and stock size remain much less clear, because the datasets that are available are fragmentary. Nonetheless, significant declines in older stages have been observed in 20 out of 54 available fishery and stock assessment datasets. Factors that are likely to contribute to the changes in European Eel stocks and recruitment include fisheries (for local use and international trade), habitat degradation, disruption of migratory routes, pollution and natural climate fluctuations as well as human-induced climate change; the relative contribution of each of these remains unresolved. However, there is significant international trade due to heavy demand for European glass eels for export to Asia for captive rearing. While total exports have declined in recent years, high prices are likely to maintain incentives to catch this species for export. It seems that exploitation for trade may be a significant factor in current eel declines, possibly exacerbated by changing oceanic climatic conditions. The European Eel may therefore meet the criteria for inclusion in Appendix II.

In view of the presence of other eel species in trade, effective enforcement would require the development of adequate identification methods for all parts that featured prominently in trade.

Supporting Statement (SS)	Additional information
	Taxonomy
	The following are synonyms for the European Eel: Muraena anguilla *Linné, 1758* Anguilla acutirostris, latirostris, mediorostris*, Risso, 1826* Anguilla vulgaris *Flem, 1828* *(Keith and Allardi, 2001).*
	Range
The European Eel occurs from the Atlantic coast of North Africa, across Europe (including the Baltic Sea and Mediterranean), northern Africa and Asia. It also occurs in the Canary Islands, Madeira, the Azores and in Iceland. This species is believed to spawn in the eastern part of the Sargasso Sea (although spawning has never been observed) therefore the distribution of eels on their spawning migration extends from northern Europe across the Atlantic Ocean and down to the Sargasso Sea. This species is generally accepted as being a single panmictic stock although genetic studies suggest there may be some isolation of eels by distance implying non-random mating and restricted gene flow. However, more recent studies have suggested that the observed genetic variation is temporal (i.e. between cohorts) and not spatial. The exact identity of the Icelandic stock might be disputed, but the abundance of European Eel in Iceland is low, with no fishing or trading taking place there.	*The board of scientists at the INDICANG project have proposed the existence of three European Eel stocks (north, central and southern) (Feunteun, 2007).*

Supporting Statement (SS)	Additional information
IUCN Global Category	
	Not assessed.

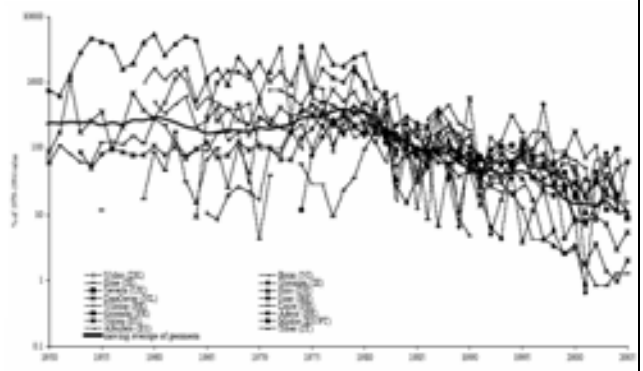
Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP13) Annex 2a)

A) Trade regulation needed to prevent future inclusion in Appendix I

The Joint European Inland Fisheries Advisory Commission (EIFAC) and International Council of the Exploration of the Sea (ICES) Working Group on Eels met in 2006 to review the available information on the status of the stocks and fisheries of the European Eel. Despite available data on recruitment, stock and fisheries being fragmentary, they supported the view that the population as a whole seems to have declined in most of the distribution area, that the stock is outside biological limits and current fisheries are not sustainable.

The ICES/EIFAC Working Group based their conclusions on recruitment time series from 19 rivers in 12 countries which all showed downwards trends in the last 25 years (from both catch records and fishery-independent surveys). The average decline in glass eel collection was in the order of 95–99% from 1980 to 2005.

Time-series of glass eel recruitment in European rivers
(each series scaled to 1979-1994 average):



A very low level of recruitment was observed in 2001, which was synchronous with a small size of glass eel and was interpreted as a sign of adverse oceanic conditions. The most recent low recruitment in 2006 occurred under more favourable oceanic conditions (NAO index) and mean glass eel length was not low indicating this was unlikely to have been the result of adverse oceanic effects.

In 2003, an International Eel Symposium provided evidence that recruitment to the continental stock declined to 1–5% of its former levels in the late 1970s, based on the four longest glass eel collection series.

In the first half of the 1990s, a moderate recovery in glass eel recruitment was observed, which later in that decade can be seen as an increase in yellow eel recruitment.

In addition to overfishing, several other anthropogenic factors may have contributed to these sharp declines (see Threats section below).

While there is little question over the marked declines in recruitment of European glass eels in recent decades, data are lacking to show conclusively whether continental stocks of yellow and silver eels have also declined as much as recruitment and whether the two are linked. There is some evidence to suggest that there have been inland declines that preceded recruitment declines by 20 years (Dekker, 2003), and another study suggesting that inland declines have been less pronounced, inconsistent across the distribution range and could have been driven by natural climatic changes and, in the case of catches, by changing fishery patterns (Knights et al*., 2006). Even so, in this latter study (which has not yet been formally published), of 54 datasets (both catch data and fishery-independent assessments) 37% underwent significant declining trends while 7% increased and for 56% no significant trend could be determined. Of these times series, 15 showed a decline of 95% from 1980 to 2005 from a peak about 50% above the long-term mean and it is argued that there are decadal-scale patterns which suggest recent trends are not abnormally low compared to historic ones (Ibid.).*

The ICES/EIFAC Working Group (2006) reports that landings of yellow and silver eels have reduced by at least 50% in all countries except Belgium in the last decade. It is recognised that the link between landings (without effort data) and stocks are not clear-cut and that changes in landings are not necessarily related to decline in recruitment and could be driven by changes in stocking and motivation for eel fishing.

The total catch in the glass eel fisheries is estimated at 583 tonnes (Moriarty and Dekker, 1997), but this is certainly an underestimate of the true catch: the landings are often locally processed, illegal or not documented (Dekker, 2001).

Total reported landings of European Eels (to FAO) dropped to 43.5% from 1984–2000 (Anon, 2001).

Supporting Statement (SS)	Additional information

B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

Most EU Member States acknowledge the serious state of the European Eel stock and are concerned about the need of action for recovery within the Community to conserve the stock. The EU Commission has proposed a recovery plan (see below).

In different countries and regions fisheries target various life stages of the European Eel (glass eels are mainly targeted in South West Europe and North West Africa, adult eels are targeted in Northern Europe).

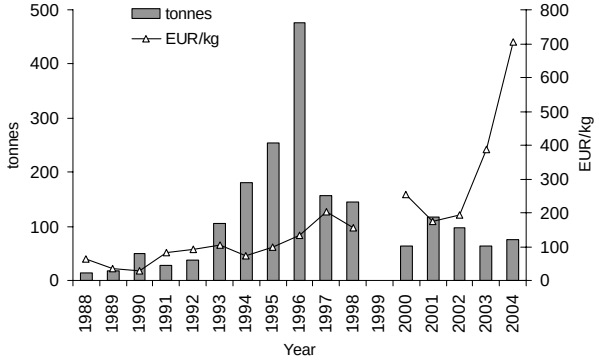
International trade of European Eel is high and from Europe consists mainly of live glass eels exported to Asia for rearing in aquaculture, with exports comprising more than 50% of total estimated landings of glass eel since the late 1990s. Between 1995 and 2005, an estimated half a billion live glass eels were exported from the EU on average each year to Asia. The estimated total value of world trade in European glass eels in 1997 (100–130 t) was EUR 30 million. Trends in prices paid for glass eels may indicate the high commercial pressure that trade can have on global populations of eels (since 1997 prices increased although amount exported decreased). Poor recruitment of *A. japonica* led to increase in the value of European glass eels, while demand for European glass eels declined in years when recruitment of *A. japonica* was higher.

The EC exports all life stages of European Eel and also imports mainly adult eel. Small yellow eels are also traded among European countries and within countries for stocking purposes. European Eel aquaculture also takes place in Europe, mainly in Italy, Netherlands and Denmark, based on rearing glass eels from France, Great Britain and Spain. European aquaculture production exceeds the wild-caught supply.

European Eels have several life history characters which increase their vulnerability to exploitation; they have a single opportunity during their life cycle to produce offspring following which they die (semelparous), they are long lived (a captive specimen has lived for 84 years), attain large body size (to over 1 m and 6 kg), undergo trans-Atlantic migrations as planktonic larvae lasting up to three years, undergo a prolonged growth phase before spawning and therefore have late age at sexual maturity (3–25 years; on average 7–8 years for males, 11 years for females) and long generation time (minimum 11 years). Hence, the European Eel should be considered as a species with low productivity.

Eel aquaculture based on rearing glass eels first began on a commercial level in Asia in 1931, with European Eels being used by the 1990s, largely due to shortage of Japanese glass eels (Ringuet et al*., 2002).*

Exports and prices of live Anguilla *spp. (mostly glass eels) from EU to non-EU Member States (data combined from Anon 1999 and Raymakers 2006):*



Prices of European glass eels undergo huge monthly fluctuations (data available for 1993–2001), reflecting fluctuating availability and demand (Ringuet et al*. 2002).*

Prices of glass eel (in Loire, France)(production sold by the fishermen to the fishmonger):

February 2007: 240 €/kg

March 2007: 300 €/kg

In 2005, the price reach 500 €/kg (Anon., 2005a).

In Britain, glass eel and elver catches are almost exclusively exported, as are the majority of yellow and silver eel catches with total export value peaking at £2.8/ € 4.2 million in 1998 and subsequently falling (Knights, 2001).

The EC imports mainly adult eel largely from other countries in northern Europe (TRAFFIC Europe, 2007).

Wood (2007) disputes the exact level of international trade of European Eel and claims that the maximum export of glass eels to Asia was only 200 t in 1997 and has recently stabilised at 50 t per year.

Trans-Atlantic leptocephali migration has been demonstrated in some cases to last for less than one year (Lecomte-Finiger, 1994). Semelparity is assumed but not proven.

Age at maturity varies according to latitude, ecosystem characteristics and density-dependent processes (Acou et al*., in press; Feunteun* et al*., 2003). The European Eel life cycle is shorter for populations in the southern part of their range compared to the north and therefore generation time varies from four to twenty years (Feunteun, 2007).*

Knights (2007) notes that eels have high fecundity and therefore disputes that the species is of low productivity.

Supporting Statement (SS)	Additional information

Other information

Threats

In addition to overfishing, other anthropogenic factors might have contributed to the sharp recruitment (and possible inland landings) decline including freshwater and coastal habitat loss, pollution (bioaccumulation of lipophilic contaminants which may impair reproductive success after spawning migrations), climate change, introduced parasites such as *Anguillicola crassus* (accidentally introduced from Asia), ocean current change (as evidenced by parallel declines in European and American eels), loss of upstream/downstream migration routes due to dams and other constructions and mortality caused by turbines of hydroelectric power stations. All of these factors have been implicated in reducing spawner quality or quantity. While this does not negate the need to reduce fishing mortality, it is acknowledged that restricting trade alone may not be sufficient to bring about recovery.

Reduced release of some toxins will have beneficial effects in European Eels in future, as will construction of eel ladders and bypasses to mitigate the hazards posed by dams and hydroelectric turbines.

There is no doubt that there is an unresolved level of interplay between various factors that contribute to changes in European Eel stocks and recruitment which is why no single cause has been identified to have caused continental-wide declines in recruitment.

Loss of wetlands in Europe is thought to have reduced the available eel habitat by at least 50% (Ringuet et al*., 2002). However, there is some evidence that habitat loss and pollution alone are not sufficient to explain the extent and timings of the decline in recruitment (Knights* et al*., 2001).*

Some studies have suggested that environmental factors including oceanic climate change have had a disproportionate influence on European Eel recruitment (Friedland et al*., 2007). Even if this is the case, the impact of environmental change is likely to make the populations less able to support sustainable exploitation and hence fishery controls will be an important factor in preventing the continued decline of this species.*

Natural mortality rates are estimated in the order of magnitude of 75% over the life span of European Eels (Moriarty and Dekker, 1997).

Conservation, management and legislation

The European Eel does not fall under the protection of any international law.

The EC has issued a Proposal for a Community Action Plan for the Management of European Eel. The proposal presents the international objective for the establishment of River Basin District (RBD)-based eel management plans, which should aim to achieve escapement to sea of at least 40% of silver eels relative to the best estimate of potential escapement under unfished, unpolluted and unobstructed conditions. The underlying reference status of silver eel biomass remains poorly defined. These management plans should have been communicated to the EC by the end of 2006 with approved plans being put in place I July 2007.

Given the many uncertainties in eel biology and management, the continuing precautionary advice of ICES is that stocks should be managed to allow 50% of the potential maximum pristine spawner escapement.

The European Eel has been included in the EU Data Collection Regulation although required sampling levels have only been tentatively indicated, and few countries have actually included eel in their sampling programmes.

Recommendations for implementation of European Eel recovery plans have been set out at various meetings including by the ICES/EIFAC Working Group in 2006 and Workshop on National Data Collection for European Eel in 2005. These include extension of the current network of recruitment monitoring stations, yellow eel monitoring as a useful proxy for compliance to established management targets, and international harmonisation and exchange of methodologies to facilitate development and implementation of national management plans.

National monitoring of various European Eel stages is fragmentary. Some river traps provide fairly reliable data

There are various regional management measures currently undertaken to regulate European Eel fisheries. Ringuet et al. *(2002) list the principal conservation measures in place for glass, yellow and silver eels. These include (in various different countries:; a ban on commercial fishing of glass eels, gear regulations, quotas, closed seasons, licences for fishing/dealing, size limits, free gaps in weirs and requirements for elver passes. Illegal eel fishing is known to be carried out, and is particularly active in southern Europe (Ringuet* et al*., 2002). Glass eel poaching in France represents 20–30% of catches, and in many regions either equals or exceeds legal catches (Anon., 2006).*

The deadline for Eel Management Plans is now likely to be the end of 2007 and the start date for approved plans would be July 2008 (Pawson, 2007).

There are annual yellow eel surveys in the UK and estimates of silver eel escapement in Ireland (Pawson, 2007).

*The INTERREG 3b INDICANG project is currently establishing a monitoring network encompassing 11 catchments in seven regions of Portugal, Spain, France and the UK (IFREMER website, 2007). Glass eels, yellow and silver eels as well as habitat will be monitored and used as the basis of management plans (*Ibid*.).*

Supporting Statement (SS)	Additional information
on upstream migration of young yellow eels, but there are few regular routine surveys of yellow or silver eel in freshwater or coastal areas. The continuation of some long-term series is in jeopardy due to the decreased turnover of local fisheries. There are inconsistencies between official statistics and ICES estimates.	
Restocking: Restocking has been practised by some countries for decades, with the aim of maintaining fisheries rather than improving the stock or recruitment. It has taken place in Latvia (30 million glass eels stocked in 51 lakes in 1960s, now only a few lakes are stocked) and Lithuania (50 million elvers and young yellow eels stocked since 1960s). There is local stocking in Germany, Ireland, France, Spain and Italy but no central records.	*Where glass eels are surplus to a particular RBD's requirements (to meet the 40% escapement target), they can be used to boost eel production in failing RBDs, and stocking is therefore potentially useful in stock recovery (Pawson, 2007).* *Prior to 1983, the Lough Neagh European Eel fishery had an annual recruitment of around 8 million elvers (Kennedy, 2007). Since then, natural recruitment has dropped to around 720 000 elvers per year and has been boosted by restocking with glass eels from elsewhere (*Ibid.*).* *There are various potential risks associated with re-stocking including the spread of diseases, loss of genetic diversity and changes in (or even loss of) migration behaviour (Anon., 2005b; Westin, 1990). If eels are re-stocked, there is a risk that they will be disoriented and unable to find their way out to sea and on to the Sargasso Sea and hence re-stocked eels could be ineffective in contributing to recovery of the eel populations (Feunteun, 2007).*
Similar species	
There are 15–17 *Anguilla* species plus a number of more distantly related species (e.g. conger) that have generally similar morphology which in some cases could be difficult to separate, especially in processed forms. There are several new DNA techniques that have been described and applied to the identification of different *Anguilla* species.	*The three other main eel species in international trade are the American eel* A. rostrata, *the Japanese eel* A. japonica *and the shortfin eel* A. australis *(Ringuet* et al*., 2002). European Eels are the principal species traded as live glass eels for aquaculture purposes, while all the other species appear in trade fresh, frozen and smoked and are mainly identified through their biological distribution (Ibid.). There might therefore be issues of identification of non-live* A. anguilla *products in trade.*
Captive breeding	
The species is intensively ranched mostly in Asia, but despite progress in research in Japan, captive breeding is still not possible for European Eel. Therefore all aquaculture and restocking are still based on capture of wild young eel.	*Significant progress has apparently been made with captive breeding technologies although it is unclear when it will be possible to produce captive-bred European Eels on a commercial scale (Darwall, 2007). If captive breeding were to become possible, it would take some time for it to become apparent as to whether such technology would transform international markets in glass eels.*
Other comments	
	Wood (of Glass Eels UK) (2007) agrees that the total quantity of eel, including recruitment of glass eels, has declined in some areas and been reduced to zero in others and thinks this is largely due to influences such as lack of access and habitat destruction. He also believes the eel to be very widespread and abundant in the UK and that recruitment levels undergo marked inter-annual fluctuations, a point that is supported by Knights (2007). Knights (2007) contends that there are many stocks of European Eel that are not exploited or only lightly so.

Reviewers:
E. Feunteun, B. Knights, M. Pawson, TRAFFIC Europe, A. Walker, P. Wood.

Inclusion of the Banggai Cardinalfish *Pterapogon kauderni* in Appendix II.

Proponent: The United States of America.

Summary: The Banggai Cardinalfish *Pterapogon kauderni* is a small coral reef fish endemic to a restricted region of Indonesia. It has been harvested substantially for the international ornamental aquarium trade since 1995 and possibly in smaller numbers before then. Its range is restricted to 27 Indonesian islands in the Banggai Archipelago and to Luwuk harbour in central Sulawesi. The total extent of natural occurrence of the species is around 5 500 km^2, which is extended slightly by artificial introductions to nearby areas. The total extent of suitable habitat is estimated to be only 34 km^2. The Banggai Cardinalfish is a sedentary fish living in small stable groups that remain closely associated with various living benthic substrates including sea urchins, sea anemones, branching corals and mangrove roots. Despite its small size, short life span and early age at first maturity, the Banggai Cardinalfish nonetheless has a relatively low fecundity due to limited brood size and prolonged male mouth brooding. It is also vulnerable to overexploitation due to its limited dispersal abilities (it has no pelagic larval stage) and consequently has the highest degree of population subdivision ever documented for a marine fish: populations occurring on reefs within the same island are genetically differentiated from each other.

There are an estimated 2.4 million individual Banggai Cardinalfish in the wild based on data from 2004. Since the early 1990s, exports of this species appear to have increased. Recent figures indicate an annual export of some 400 000 to 480 000. Data for the period 2001–2004 suggested annual exports of around 700 000–900 000 fish, which were estimated by extrapolating shorter-term export figures. However, these figures may be overestimates if there is substantial inter-annual variation in exports (there are currently no data to determine this). Export figures may substantially underestimate the number of fishes collected if, as is suggested by various sources, there is a high level of post-capture mortality. There is some anecdotal information suggesting that the frequency of collection by traders and the number of traders visiting individual villages in the region have been recently declining, but whether this reflects dwindling abundance of Banggai Cardinalfish or other factors remains unclear. Baseline population information is not available to indicate whether the status of the species as a whole has changed since the main export trade began in 1995. Falling prices per fish suggest that there remain enough accessible stocks to satisfy current demand. However, several spatial and temporal studies have demonstrated the severe localised impact of harvesting Banggai Cardinalfish for the aquarium trade; observations indicate harvesting reduces the size of sub-populations and reduces the number of fish per group, a factor that is likely to lead to further declines and inhibit population recovery. All observed declines of individual sub-populations are recent and have been as high as 100% over three years. The extremely limited capacity for this species to recolonise areas that have been depleted by harvesting for the trade has also been demonstrated. Protection of sub-populations from fishing pressure has been associated in some cases with increased population densities. There has been substantial development of local conservation strategies for the Banggai Cardinalfish in recent years with considerable involvement of local stakeholders. Efforts are being focussed on the development of four marine protected areas (which still await implementation), increasing capacity for "*in-situ*" grow-out of juvenile fish and improving husbandry techniques to minimise post-capture mortality. There is also some evidence that a sustainable system of rotational harvest could be effective in preventing over-harvesting of Banggai Cardinalfish. Further investigations are required to determine whether "*in-situ*" breeding and rotational harvesting can be considered as sustainable strategies.

This species is proposed for inclusion in Appendix II under Resolution Conf. 9.24 (Rev. CoP13) Annex 2a criterion B because of marked recent declines in populations driven by harvesting for the international aquarium trade and the inherent vulnerability of this species to overexploitation.

Analysis: The Banggai Cardinalfish is a localised species that is harvested intensively for the international aquarium trade. While the exact levels of recent exports are not known and the most recent population estimates are from 2004, there is little doubt that a significant proportion of the total population of this species is exported from Indonesia each year. Higher levels of fishing pressure are associated with both marked recent declines in localised population size and a reduction in individual group size. The limited geographic range, small-scale isolation of sub-populations, low fecundity, and extremely limited dispersal mean this species is inherently vulnerable to overexploitation. It thus seems likely that the species meets the criteria for inclusion in Appendix II as set out in Annex 2a of Resolution Conf. 9.24 (Rev. CoP13).

Supporting Statement (SS)	Additional information
Taxonomy	
No synonyms	
Range	
Indonesia	
IUCN Global Category	
Not currently listed on IUCN Red List of Threatened Species	*Not assessed.*

Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP13) Annex 2 a)

B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

Populations are restricted to 27 islands in the Banggai Archipelago, and in central Sulawesi in Luwuk harbor. Also a small introduced population in Lembeh Strait (North Sulawesi, Indonesia), approximately 400 km NW of the Banggai Archipelago. The natural range of the species covers a maximum east–west distance of about 130 km and north–south distance of 70 km, and an overall area of approximately 5 500 km^2.

Several aspects of the Banggai Cardinalfish make it vulnerable to overexploitation including (1) very low fecundity (long mouth-brooding period (*c*.30 days); captive males mouth-brood up to six clutches per year; clutch size of brooding wild males is 3–33 embryos, and on average 18); (2) an advanced degree of parental care and elevated energy allocation per offspring; (3) direct development with no planktonic stage; (4) juvenile settlement within parental habitat.

It has a very limited geographic distribution, with a natural range of around 5 500 km^2 (plus a small introduced population) and maximum potential available habitat of 34 km^2. In 2004 the estimated total population size was 2.4 million individuals.

This species has the highest degree of small-scale population subdivision ever documented for a marine fish; populations occurring on reefs within the same island (separated by as little as 2 km) are highly genetically differentiated from each other, a consequence of limited dispersal. This means the species is unlikely to recolonise naturally even nearby areas after they have been depleted. They are also site-attached and are found in shallow water (<4.5 m depth) making them very easy to collect.

Banggai Cardinalfish entered the international aquarium trade in significant numbers in around 1995–1996. Since 1999 the fishery has expanded from Banggai Island and Bandang Island to all the major islands in the species' range including previously unexploited populations. By the late 1990s, export levels were estimated at around 600 000– 700 000 fish per year and in 2001–2004 were around 700 000–900 000 fish per year (based on observed monthly exports of 118 000 and assuming some inter-annual and spatial variation otherwise annual extrapolations would be unrealistically high). These figures may underestimate total fishing pressure since a high level of post-capture mortality is likely. These fish are caught by around 230 fishermen from at least 17 villages (from 2004 data).

The majority of Banggai Cardinalfish captured in the

Further introduced populations have been observed in at least two other locations in the region – Tumbak (a key trading village in North Sulawesi) and Palu Bay – which are believed to be the result of sub-standard fish being released by traders (Moore and Ndobe, 2006). Introduced populations have also been observed in western Bali (Gilimanuk Bay) (Lilley, 2007). The size of these introduced populations is unknown and suspected to be small (Vagelli, 2007).

Based on the parameters given in the SS, the average total number of offspring released per breeding adult per year is likely to be only about 108.

This species is relatively slow- moving, does not hide in burrows or crevasses, and is easily caught using only a net (Lilley, 2007). Hence is it intrinsically vulnerable to capture.

The ability of Banggai Cardinalfish to recolonise areas previously overfished appears to be extremely limited, as demonstrated by a site (Liang Island) that is reported to show little recovery a year after overexploitation took place on a single occasion and despite there being a nearby un-fished population (Moore and Ndobe, 2006). Some recovery may be possible if some individuals remain in an area and fishing pressure completely ceases, as demonstrated at a further location, Tinakin Laut, where overfishing forced closure of the fishery by 2004 (Moore and Ndobe, 2006). A survey in 2004 counted a reasonable number of adult fish at this site, although population census data from before and after closure of the fishery are not available (Ibid).

There is some disagreement as to whether the collection of Banggai Cardinalfish began in the multi-species aquarium fishery prior to 1992 (Moore, 2007) or only after 1992 (Vagelli, 2005a).

Total export data for Banggai Cardinalfish are unavailable and there is urgent need to establish a database for export data for the marine aquarium trade (Lilley, 2007).

According to one importer the estimated demand for the North American market is 5 000 fish per week and for the EU market is 3 000 fish (Lilley, 2007). According to the same source, other countries are estimated to add 10–25% to the quantities imported into North America and the EU therefore the total estimated global market demand for this species is 10 000 fish per week or 40 000 per month, equal to an estimated 480 000 fish per year (Ibid.). This figure is lower than the estimated

Supporting Statement (SS)	Additional information
Banggai archipelago are destined for the international aquarium trade, with most exported to the US, Europe and Asia.	*exports from 2001-2004 given in the SS.* *Export data from nine Jakarta-based export companies reported the following exports of Banggai Cardinalfish per year:* *Year 2004 2005 2006* *Number 131 721 157 368 169 653* *Source: Lilley, 2007.* *Available EU trade data indicate the following imports of Banggai Cardinalfish:* *Year 1997 1998 1999 2000 2001 2002* *Number 511 75 10 309 8 209 632* *Import data indicate that imports of Banggai Cardinalfish to Canada were 231 between October-December 2004 and 636 between January-October 2005, the majority either listed as imports from Indonesia (70%) or re-exports from the USA (28%) and the remainder imported from Singapore and the Philippines (Cooper, 2007).* *The Global Marine Aquarium Database (GMAD) reported that only 10 307 Banggai Cardinalfish were exported from Indonesia in 2001, a likely underestimate of actual trade levels (Lunn and Moreau, 2004). A low proportion of all ornamental fish exporters in Indonesia contributed data to GMAD and no data have been collected since 2003 (Agdalena, 2007). Access to the existing GMAD database is problematic (Ibid).* *Major international markets include the EC and US, with Eastern Europe, Asia, South Africa and other destinations also having a market share (Ndobe* et al*., 2005).* *Levels of husbandry at every stage of the supply chain within Indonesia appear to be poor, leading to high levels of mortality for captive Banggai Cardinalfish (Lunn and Moreau, 2002). Buyers estimated mortality rates to range from 10–40% and were occasionally as high as 100% for a shipment. However, handling techniques and hence survival rates may be improving (Ibid). In 2001, 2002 and 2004, interviews with local fishermen revealed a lack of knowledge of appropriate handling and transportation (Vagelli, 2007). However recent levels of post-capture survival in Banggai Island may be improving, with most fishers now collecting to order and thus reducing holding times (Moore, 2007). Post-capture mortality rates remain unknown.* *Available data from surveys of ten villages suggest that quantities of Banggai Cardinalfish caught have not substantially changed between 2001 and 2004 (see table below). However frequency of collection by traders may have declined with four out of ten villages reducing from weekly to fortnightly collections between 2001 and 2004 (Lunn and Moreau, 2002; Ndobe* et al*., 2005); other villages lacked information for frequency of collections in 2004. Whether these changes reflect dwindling abundance of Banggai Cardinalfish or other factors remains unclear.*
There is no baseline data for the abundance of Banggai Cardinalfish prior to the beginning of collecting for the international trade in 1995. Impacts of the trade are demonstrated by declines in population densities and size at sites affected by collection pressure including (1) complete extinction of a population off Limbo Island; 50 000 fish observed in 2001 were completely absent in 2004; (2) a population off Bakakan Island reduced from 6 000 fish in 2001 to 17 fish in 2004, (3) at Sarina Kenecil Island, density of an introduced population declined from 0.11 fish/m^2 in 2001 to 0.03fish/m^2 following initiation of a fishery in 2004.	

Supporting Statement (SS)

The greatest observed density of Banggai Cardinalfish is 0.63 individuals/m^2 at a bay off limits to all fishing; this is 900% higher than the average censuses at seven other sites in 2004.

A fishing ban at one site (Masoni) in 2003 was associated with an observed increase in density of Banggai Cardinalfish from 0.03 to 0.06 individuals/m^2 between 2001 and 2004.

An unfished population of Banggai Cardinalfish introduced artificially to Police Pier, in Lembeh Straight, increased from 0.02 fish/m^2 in 2001 to 0.1 fish/m^2 in 2004. Maximum group size increased from 21 fish in 2001 to 102 fish in 2004. This is a likely consequence of the introduced population increasing to make use of the small area of suitable habitat in this location.

Fishing pressure for the aquarium trade has also been shown to lead to decreases in individual group sizes by up to 50%.

The price per fish in the aquarium trade has dropped since it was first traded in 1995 when retail prices were about US$100 per fish. Current retail prices for wild-harvested fish are about US$15–25 per fish and for captive-bred fish are about US$25 per fish. Local collectors are reported to only receive US$0.02–0.05 per fish, while exporters pay buyers US$0.1–0.12 per fish.

Additional information

Annual harvest of Banggai Cardinalfish:

Village	2001	2004
Bone Baru	6-7 000	7 000 + 2500
Monsongan	6-10 000	8-10 000
Tinakin Laut	7-10 000	0
Tolokibit	1.5-6 000	3-6 000
Matanga	6-13 000	No data
Bokan	10 000	10-15 000
Kepulauan Panapat		
Bokan Kepulauan	33-38 000	Variable
Other villages		
Labobo	2-4 000	No data
Bangkurung	4-13 000	No data
Peleng	4-10 000	No data

Annual data from Lunn and Moreau 2002, and Ndobe et al., 2005.

Four of these villages appeared to have undergone a decline in the number of fishers (some to zero) and traders visiting between 2001 and 2006 (Lunn and Moreau, 2002; Ndobe et al*., 2006).*

Declining group size may have a strong negative impact on individual fitness and inhibit subsequent recovery, a process known as the Allee effect (Stephens and Sutherland, 1999).

Heavily fished areas lack fish in 3–4 cm size range, the favoured size for the trade (Moore, 2007); this is around the size of sexual maturity for both males and females.

Kolm and Berglund (2003) report that fishermen move on to new areas of reef when old ones have been emptied, suggesting a serial depletion of the stocks.

The decreasing price per fish since first entering the trade is a likely consequence of increased supply and increasing participation of fishers and buyers in the trade (Vagelli, 2007). It appears that accessible stocks of Banggai Cardinalfish have not yet been reduced to low enough levels to drive prices up.

The majority of information gathered from importers indicates the international demand for Banggai Cardinalfish remains high. Anonymous US and UK buyers indicated that every shipment of aquarium fish from Indonesia includes Banggai Cardinalfish and that the species remains very valuable in the trade (Lilley, 2007). Representatives from the European Pet Organisation and Ornamental Fish International (OFI) stated that they have never encountered problems with supply of Banggai Cardinalfish and that Indonesian exporters prefer to provide as large consignments as possible (because they get better prices from in-country suppliers) and all orders are delivered without delay irrespective of how many fish are requested (Fossa, 2007). Most OFI members on the importing side are supportive of the proposal to list Banggai Cardinalfish in CITES Appendix II (Ibid.). However, the main Swedish importer claims that the current demand for Banggai Cardinalfish is much lower than it was in the early 1990s; and in 2006 although approximately 100 fish were ordered from exporters, only 41 were provided (Bensgård, 2007). The Swedish market in marine aquarium fish is much smaller compared to the rest of Europe, the USA and Asia, however it is possible that this trend is an indication of reduced interest in this species among aquarium hobbyists (Kolm, 2007).

Supporting Statement (SS)	Additional information

Other information

Threats

The primary threat is from over-harvesting for the aquarium trade as well as habitat degradation and loss.

Coral reefs throughout the Banggai Archipelago have experienced widespread damage from destructive fishing methods, overfishing of food species and increased siltation and nitrification associated with uncontrolled forest clearance. The Banggai Cardinalfish is confined to inshore habitats making them especially susceptible these threats.

The harvesting of Banggai Cardinalfish is not associated with the use of cyanide (Lunn and Moreau, 2004), however Banggai Cardinalfish are exposed to the detrimental affects of cyanide fishing which is prevalent in the region (Vagelli, 2007).

Based on available survey data, coral mining (which provides building materials and is illegal in Indonesia) is a severe and ongoing threat to coral reefs in the region, which increased dramatically in the Banggai Archipelago after the major earthquake of 2000 (Moore, 2007).

Conservation, management and legislation

There are no specific fisheries management plans or regulations for the Banggai Cardinalfish.

In 1995 regional fishing regulations were changed to prohibit people living outside the Banggai district from fishing in the area without purchasing government permits.

The Indonesian government prohibits the use of chemicals or explosives to catch fish (Fisheries Law No. 31/2004, Art. 8(1)).

Currently, there are no international regulations protecting the Banggai Cardinalfish.

In 2004 there was authorization to create two pilot marine protected areas in Kokungan Bay, Banggai Island, and Latinbung, Bangkulu Island.

Lack of enforcement resources and limited local awareness means that regulations concerning fishing and other activities which affect the marine environment (such as coral mining) are largely unimplemented (Moore, 2007). The current legal framework is difficult to enforce but can be addressed by suitable local legislation under Regional Autonomy which empower local authorities at district level and communities at village level (Ibid.).

Two Indonesian NGOs are in the process of developing various conservation strategies for the Banggai Cardinalfish with involvement of local stakeholders; Yayasan Palu Hijau (YPH – based in Central Sulawesi, an area with an introduced population of Banggai Cardinalfish) and Yayasan Pemerhati Linkungan (YPL – based in Central Sulawesi) which is mentioned in the SS. However, there has yet to be a unified and fully funded conservation plan introduced for the Banggai Cardinalfish (Vagelli, 2007).

*Activities planned by YPH and other partners in the Central Sulawesi Regional Centre of the Sea Partnership Programme, include (1) development of "*in-situ*" breeding capacity (see below), (2) development of local regulations at village and district levels, (3) conducting further surveys of Banggai Cardinalfish distribution, population status and habitat status, (4) developing sustainable fishery/community resource management models including improved marketing, (5) development of good practice guidelines for collection and husbandry in the trade (Moore and Ndobe, 2006).*

YPL and The New Jersey Academy for Aquatic Sciences were authorised by the local Fisheries Authorities in 2004 to create two small pilot protected areas. However, so far no funding has been secured, and the project has not yet been implemented (Vagelli, 2005b).

YPH in partnership with a number of other organisations is supporting the development of two pilot marine protected areas (in different locations to the YPL protected areas), for which the Banggai Kepulauan District has allocated funds during 2007 but which still need to be fully implemented and for which further funding is being sought (Moore, 2007).

A system of three-month rotational harvesting and a ban on collecting brooding male Banggai Cardinalfish have been independently instigated by one of the village heads (at Panapat) covering various collecting sites in

Supporting Statement (SS)	Additional information
	the Banggai Archipelago (Moore and Ndobe, 2006). In 2004, surveys within one of these collecting sites (Tanjung Nggasuang) revealed some evidence for the sustainability of this system; trends were observed for more fish (1 832) in sample survey sites within Tanjung Nggasuang compared to a single unfished site (560) as well as larger group size (6.28 and 1.98 fish per urchin respectively) and higher juvenile to adult ratio (3/6 compared to 1/4) (Ibid). However actual extraction levels from this site are unknown and sample sizes for the comparison of populations were low (n = 1). Thorough investigation is needed to determine whether the three-month rotational harvesting programme can actually be considered as a sustainable strategy (Kolm, 2007). *The concept of management plans for collection areas for marine fish and other organisms caught for the marine aquarium trade has recently been introduced in Indonesia by the Marine Aquarium Council (Lilley, 2007).*
Captive breeding	
The species can be reared in captivity through its entire life cycle, and numerous commercial operations exist. In 1997, the New Jersey Academy for Aquatic Sciences began a captive breeding program, and all aspects of the reproductive biology of this species have been described. Using cage grow-out systems, facilities can raise marketable-sized fish within 100–130 days; survival rates from the time of release of juveniles to market size ranged from 66 to 95%. However, the relatively high cost of its production combined with the large number of less expensive wild-harvested fish has prevented expansion of aquaculture efforts. In addition, a newly emerging threat (a viral disease) has been documented in wild-harvested individuals maintained in captivity.	*A programme of "*in-situ*" captive breeding is being developed in the Banggai archipelago (LP3M STPL-Palu, 2006), but is currently not yet underway with no exports from the region (Vagelli, 2007). The aim of the programme is to reduce initial mortality after release from male brood pouch rather than full-cycle breeding (LP3M STPL-Palu, 2006). Thorough investigation is needed to determine whether an* in-situ *breeding programme can actually be considered as a sustainable strategy (Kolm, 2007).*
Other comments	
The Banggai Cardinalfish is easily differentiated from the other 270 species in the family Apogonidae.	*The Banggai Cardinalfish is part of the multi-species ornamental aquarium trade and while it rarely provides a sole source of income for fishing families, the income from collecting this species can be a valuable source of extra income often providing for health and education (Macfadyen* et al*., 2005). Often poorer members of the communities are involved in collecting Banggai Cardinalfish due to low capital costs and low prices paid which tend not to attract wealthier community members (Moore and Ndobe, 2006). Interviews with local buyers indicated that they bought other products and saw the Banggai Cardinalfish as providing supplemental income (Lunn and Moreau, 2004).* *The release of sub-standard fish in areas away from original collection sites is known to occur and could lead to detrimental genetic mixing of the naturally subdivided population (Moore and Ndobe, 2006). If artificial reintroductions and restocking were to be considered as a conservation options, then careful consideration of the genetically-divided population structure is essential for this to be successful.* *According to Lilley (2007), the marine aquarium trade relies heavily on roving collectors who make collecting journeys at sea for up to several weeks at a time away from their home region.* *Moore (2007) expresses the hope that any CITES listing*

Supporting Statement (SS)	Additional information
	will not impede the locally-driven conservation and sustainable management efforts outlined above.

Reviewers:
Agdalena, N. Kolm, G. Lilley, A. Moore, TRAFFIC Southeast Asia, A. Vagelli.

Inclusion of the spiny lobsters *Panulirus argus* and *P. laevicauda* from Brazil in Appendix II.

Proponent: Brazil.

Summary: The spiny lobsters *Panulirus argus* and *P. laevicauda* are distributed along the eastern Atlantic coast from the Bermudas and the USA's east coast to Rio de Janeiro (Brazil), including the whole of the Gulf of Mexico and the Caribbean Sea. *P. argus* is the most abundant of the two species. There is wide variation in recruitment from year to year, believed to be related to environmental factors such as El Niño/Southern Oscillation events that are typically associated with years of poor production.

The spiny lobster fishery in Brazil has been operating for around 50 years and in recent decades a high proportion of the catch has been exported, mainly to the USA, and also to Japan and France. There is also a significant domestic market, often for lobsters below the minimum size. Despite regulations aimed to ensure sustainable fishing being in place for over 40 years, a marked decrease in population abundance has been identified, starting in 1993. The catch per unit effort declined by around ten times for *P. argus* from 0.936 kg/trap-day in 1965 to 0.097 kg/trap-day in 1997 and more than ten times for *P. laevicauda* from 0.410 kg/trap-day in 1976 to 0.019 kg/trap-day in 1997. A large increase in the number of boats, chiefly sailboats and smaller motorised craft, many of which were unlicensed and typically used non-selective methods, has resulted in a considerable shift of fishing intensity from deeper to shallower waters and a shift to higher exploitation of immature spiny lobsters. Greatly increased fishing effort has maintained production figures. In 2000, the Brazilian Technical Working Group on Lobsters estimated that the fishing effort was 112 million trap-days a year, 82 million trap-days above the number estimated to generate maximum sustainable yield levels. Forty nine million trap-days were generated by that part of the fleet that had no fishing permit. A Management Usage Sustainability Plan for both species in Brazil aims to promote the recovery and maintenance of sustainable lobster usage. Considering that spiny lobster fishing is largely for the foreign market production, it is believed by community representatives, fishing companies, and government and civil society representatives that international cooperation is necessary in order to ensure sustainable exploitation.

The proponent seeks to include the Brazilian populations of *Panulirus argus* and *P. laevicauda* in Appendix II of CITES, in accordance with Article II, paragraph 2 a) of the Convention and with Resolution Conf. 9.24 (Rev. CoP 13) Annex 2a, paragraph B.

Analysis: Available evidence (based mainly on production figures and catch per unit effort estimates) indicates that the Brazilian populations of *P. argus* and *P. laevicauda* have substantially decreased since the beginning of the fishery, 50 years ago. Catch effort has substantially increased over that period and fishing is believed to be a major cause of the decline. A large proportion of the catch in recent decades has been for export and spiny lobsters below the allowed size are reported to be frequently exported with potential impacts on recruitment. It is possible therefore that these populations meet the criteria for inclusion in Appendix II set out in Resolution Conf. 9.24 (Rev. CoP 13).

Non-Brazilian populations of *P. argus* and *P. laevicauda* are excluded from the proposal. These populations are also exploited and feature in international trade. Resolution Conf. 9.24 (Rev. CoP 13) states that split-listings that place some populations of a species in the Appendices and the rest outside the Appendices, should normally not be permitted. Distinguishing spiny lobsters in trade that originate in Brazil from those originating elsewhere will be problematic and hence enforcement is likely to prove challenging.

Supporting Statement (SS)	Additional information
Taxonomy	
Caribbean Spiny Lobster *Panulirus argus.* Smoothtail Spiny Lobster *P. laevicauda.*	
Range	
Brazil. *P. argus* and *P. laevicauda* occur along the western	P. argus *Western Atlantic: Bermuda and the USA east coast at North Carolina to Rio de Janeiro including the entire Gulf of Mexico and the Caribbean Sea. Reported*

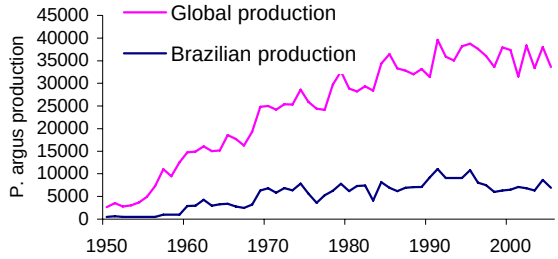
Supporting Statement (SS)	Additional information
Atlantic Coast from Bermuda and the USA's east coast to Rio de Janeiro (Brazil), including the whole of the Gulf of Mexico region and the Caribbean Sea.	*twice from West Africa (Ivory Coast) (Holthuis, 2006).* P. laevicauda *Western Atlantic: Bermuda and Florida to east Brazil, including Yucatan and the Caribbean Sea (Holthius, 2006).*
IUCN Global Category	
Currently not listed.	

Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP13) Annex 2a)

A) Trade regulation needed to prevent future inclusion in Appendix I, or

B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

About 95% of spiny lobsters caught in recent decades are exported. The main export markets are the USA (the most important), Japan and France. Some of the lobsters exported have a size inferior to that allowed by current regulations.	*A high proportion of* P. argus *and* P. laevicauda *are apparently exported, e.g. 95% in 2005 in the State of Bahia (Anon., 2007). However, other data and sources indicate there is a significant domestic market. For example, in 2004, approximately 1 000 t of lobster were sold in the domestic market which accounts for around 10% of the total trade (since around 7 540 t of the total production of 8 688.5 t were exported as lobster tails–- based on data from IBAMA, 2005).* *According to Sergiu Colaferri Filho, President of "Netuno", a fishing export company (the biggest exporter of seafood products in Brazil) the national market consumes lobsters smaller than the legal minimum size (Anon., 2006a). According to Jefferson Souza da Silva, Advisor, Programme for Management of Coastal Resources, Instituto Terramar, Brazil,* P. argus *with tail lengths of less than the minimum size are sold in markets for R$12, but this price jumps to R$90 when the minimum size is respected (Anon., 2006a).*
Since lobster fishing started in Brazil 50 years ago (in an area extending from the State of Amapa in the north to Espirito Santo in the south), the Catch per Unit Effort (CPUE) for the two species has decreased by around 90% from 1.0 kg/trap-day at the beginning of the fishery to 0.1 kg/trap-day in recent years.	*CPUE has declined from 0.936 and 0.410 kg/trap-day in 1965 to 0.097 and 0.019 kg/trap-day in 1997 for* P. argus *and* P. laevicauda *respectively (Chaffee, 2001).* *Matthews (2007) notes that fishing mortality exceeding natural mortality is not a general criterion for defining over-fishing.*
Fishing mortality rates for both species are much higher than natural mortality rates, indicating the existence of over-fishing.	*The spiny lobster stock assessment report, based on research implemented by the Brazilian Institute for the Environment (IBAMA), considered 1970–1998 data and found that starting in 1993 there was a strong decrease in population abundance (Castro e Silva* et al., *2003).* *This interpretation is not borne out by FAO Fisheries statistics nor by the graph of production data presented in the proposal. This graph is not referenced, but is presumably based on national statistics.*
The proponent states that a reduction in production of around 64% was observed between 1979 (year of greatest production) and 1993.	*FAO production statistics show that* P. argus *production in Brazil follows alternate rising and falling trends with maxima in 1962 (4 300 t), 1970 (6 800 t), 1972 (6 900 t), 1974 (7 859 t), 1979 (7 826 t), 1982 (7 426 t), 1984 (8 189 t), 1991 (11 089 t), 1995 (10 817 t), 2004 (8 689 t) (FAO Fisheries and Aquaculture Database – see figure below). Years with low production were 1950, 1952–56 (500 t), 1963 (3 100 t), 1967 (2 500 t), 1971 (5 800 t), 1973 (6 400 t), 1976 (3 583 t), 1980 (6 218 t), 1983 (4 057 t), 1986 (6 176 t), 1998 (6 002 t), 2003 (6 320 t).*

Supporting Statement (SS)	Additional information
	These data show that 1991 was the year of highest maximum production and the figure for 2004 (the latest year for which data are available) is still higher than maximum production levels recorded in the 1960s, 70s and 80s. However production figures since the 1990s do not reflect CPUE, which during this period has been around ten times higher than at the beginning of the fishery (FAO Fisheries and Aquaculture database). *From 1995–2005,* P. argus *catches in Brazil accounted for between 17 and 27% of global catches (see chart). Catch statistics for* P. laevicauda *are not available from FAO.* **Global and Brazilian catches of *Panulirus argus***  *Source: FAO Fisheries and Aquaculture Database* *Contributions to total landings by the industrial local fleet in Brazil in terms of numbers of specimens and weight are 56.6% and 70.6% for* P. argus *and 43.5% and 29.4% for* P. laevicauda *(Fonteles-Filho, 1994).* *Environmental factors, such as either El Niño/Southern Oscillation, are believed to have significant impacts on lobster recruitment and production (Castro e Silva* et al.*, 2003; Rogers, 2007). Low production in 1982, 1986–87 and 1997–98 are believed to be associated with El Niño events as suggested by production data in the SS.*

Other information

Threats

Demand for these species to supply the foreign market is responsible for over-fishing, excessive fishing effort and disrespect for minimum allowed catching sizes.	***Changes in fishing gear*** *The use of gillnets has resulted in a considerable increase in fishing effort (days fishing and number of trips). Prior to 1995, gillnets were prohibited in the industry. The most significant impact was through the transfer of smaller gillnet boats that had previously fished fish and shrimps, to the lobster fishery.* ***Changes in fishing methods*** *In recent years free diving has become a new fishing method. Fishers operate around artificial reefs set along the coast and free-dive, capturing the available lobsters with a scoop net. This fishing method affects stock in places with great concentrations of immature lobsters. Sampling carried out on fishing operations during the 2001 fishing season in Ceara State indicated that of 10 tonnes of lobsters sampled, 8.2 tonnes were below the minimum legal size (Castro e Silva* et al.*, 2003).*

Supporting Statement (SS)	Additional information
	Changes in fishing boats *In 1968, lobster fleets were artisanal and then acquired industrial characteristics when mechanisation took place. In the late 1980s due to lower landings per vessel and higher costs of production, the boats changed again to small and medium-sized fishers. Between 1991 and 2001 there was a substantial increase in boats, as a consequence of the higher prices paid for lobster and the introduction of gillnets, which are cheaper to acquire and easier to operate from smaller vessels. In Ceara State alone, this process represented an increase of 58.4% in fleet size. The majority (66.8%) of new vessels were sailboats that did not have fishing permits (Castro e Silva* et al*., 2003).* *Given the restricted operational range of these small boats, the impact has been largely on the shallower seas where juvenile lobsters occur (Ehrhardt and Sobreira Rocha, 2003).* *According to WWF, in 2006, the fishery was made up of a dwindling industrial fleet, a strong artisanal group and a sector comprised of mid-sized motorboats (Anon., 2006b).* *The Technical Working Group on Lobsters estimated that the fishing effort applied on Brazilian lobster stocks in 2000 was 112 million trap-days, which is 82 million trap-days above the number of trap-days estimated to generate maximum sustainable yield levels. It is significant that 49 million trap-days were generated by that part of the fleet that had no fishing permit (Castro e Silva* et al*., 2003).* ***Climate change*** *The two* Panulirus *species inhabit reefs formed by calcareous algae. In general, macroalgal surveys have been carried out only in limited areas of Brazil (Couto* et al*., 2003), but Rogers (2007) notes that climate change as well as fishing impacts may cause a reduction or fragmentation of the lobsters' algal reef habitat.*
<u>Conservation, management and legislation</u>	
Legislation National legislation dates back to when the first fleet restrictions were introduced. In 1961 a closed season was introduced in some states followed by restrictions on total minimum catching length in following years. Further regulatory measures were introduced in 1967, 1971 and 1978 including minimum catching size, prohibition of catching young and pregnant females and of fishing in nursery areas, and controls on fishing tackle. Currently the following main regulation measures are: limitation of vessel licences, closed season from 1 January to 30 April, minimum tail length of 13 cm or minimum carapace length of 7.5 cm; minimum mesh size of 5 cm for netting used in traps, nursery areas closed to fishing in certain specified areas; gillnets prohibited; and lobster catch by any means of diving prohibited. There are no legal international tools that regulate exploitation that are valid in Brazil.	*Brazilian fishery managers have developed significant regulatory measures in recent years that if fully implemented should promote sustainable and more stable production (Matthews, 2007). However despite legislation measures being in force since the early 1960s near the beginning of the fishery, generally there is a perceived crisis (Castro e Silva* et al*., 2003).*
Management The Management Board on Lobsters has approved a Management Usage Sustainability Plan for both species with the general aims of promoting the recovery and maintenance of sustainable lobster usage, and also assuring that power and responsibility for the plan is shared between the State and the users	***Management*** *In 2000 the Marine Stewardship Council (MSC) carried out a pre-assessment of the Prainha do Canto Verde community-based lobster fishery in Ceara state concluding that the community was fishing responsibly, but that the Government had failed to deal with illegal fishing, resulting in a major shortfall in the*

Supporting Statement (SS)	Additional information
(fishermen, ship owners and manufacturers). The Board also carries out regular monitoring including population, landings and production. Brazil asks the countries importing lobsters from Brazil to co-operate by not allowing their citizens to buy Brazilian lobster smaller than the minimum catching sizes. **Conservation** Fishing-free exclusion areas are to be proposed.	*stock (Anon., 2006b; Chaffee, 2001). The MSC certification team was told there were many instances of what Brazilians call "predatory fishing" where illegally fished and undersized lobsters are taken, sold and exported because there is a lack of enforcement of industry regulations (Chaffee, 2001). Mayors of six coastal counties have launched a regional management effort along 200 km of coastline, including enforcement actions at sea, public awareness campaigns, and the creation of alternative sources of income. The federal government supports this initiative and money from the National Environment Fund is supporting the plan. Validation from an international independent body of experts has improved the acceptance of artisanal fishery representatives on the Board of the Lobster Foundation (Anon., 2006b).* *In 2004 the Management Usage Sustainability Committee was set up to assist IBAMA in the decision-making process for managing the sustainable use of lobsters (Ministry of Environment, 2005).* *Rogers (2007) notes that fisheries measures should consider other fisheries for which lobsters are a bycatch or which damage lobster habitat and that effective management of lobster habitat is necessary.* ***Conservation** The number and size of marine protected areas are considered to be insufficient and some still lack management plans. Fisheries administration and management are still precarious and in many areas lack effective participation of local communities (Amaral and Jablonski, 2005).*
Similar species	
	Both species occur outside Brazilian waters (see Range above). *Sarver* et al*. (1998) recognised two genetic forms of* P. argus *and recommended subspecific status:* P. a. argus *(Caribbean) and* P. a. westonii *(Brazil) until a formal taxonomic revision could be done. Larvae of* P. argus *can travel thousands of kilometres on ocean currents, but Sarver* et al. *(2000) point out that runoff from the Amazon basin continues to act as a barrier to larval migration and effectively separates the two subspecies.* *From 1995–2005,* P. argus *catches in Brazil accounted for between 17 and 27% of global catches. Catch statistics for* P. laevicauda *are not available from FAO (see above).*
Captive breeding	
No artificial reproduction or assisted programmes are being implemented.	
Other comments	
	Different genetic groupings of P. argus *have been identified off the Brazilian coast, indicating the possible existence of two populations, one located from Pernambuco to Bahia and another from Ceara to Para (Carreiro, 2001). More refined DNA analyses of* P. argus *and* P. laevicauda *are presently being carried out in Brazil (Castro e Silva* et al*., 2003).* *Matthews (2007) considers that lack of domestic enforcement in the export market indicates that international co-operation is required to promote*

Supporting Statement (SS)	Additional information
	sustainable use of spiny lobsters. More generally, the lack of international co-operation in regional lobster fishery, specifically the adherence to minimum landings size, is an issue for many countries. Reduced landings of spiny lobster throughout the Caribbean may indicate that current fishing practices have reduced the lobster population below a self-sustaining level (Matthews, 2007). *Various management measures are in place for spiny lobsters in the Western Central Atlantic, although a regional workshop on the matter held in 2002 reinforced the need for greater national and regional cooperation in their management and utilization (FAO/WECAFC, 2003).* *Given that the majority of exports go to the USA, the U.S. Lacey Act already should interrupt the importation of undersized and illegal products (Glazer, 2007). The form in which the lobster is exported may be an issue, especially if it is lobster meat for which minimum sizes cannot be enforced. However, if the tails are intact and the product is not trans-shipped (both problems even with CITES listing) through another country, the Lacey Act should be easily enforced (Ibid.).*

Reviewers:
R. Glazer, T.R. Matthews, B. Phillips, A.D. Rogers, TRAFFIC South America

Inclusion of *Corallium* spp. in Appendix II.

Proponent: The United States of America.

Summary: *Corallium* spp. are a group of about 31 species of octocorals that occur throughout the world. Seven species included in the proposal under *Corallium* have now been reassigned to a new genus, *Paracorallium*. They are benthic suspension feeders, occurring at depths ranging from 7 to 1 500 m. They are part of a group, known as precious corals, that is commercially exploited. The dominant colour of the various species ranges from white, through various shades of pink and orange to deep red and the products are used extensively in jewellery and art objects. Many species have populations that are too small or scattered to be useful for commercial fisheries. The species that are used commercially include *Corallium rubrum* in the Mediterranean and north-east Atlantic, and several species in the north-west Pacific. Many species, especially those in deeper waters, are slow-growing and long-lived and particularly vulnerable to over-exploitation. *C. rubrum*, which occupies depths from 7 to 300 m, reaches maturity relatively quickly and has sustained extensive exploitation in several areas of the western Mediterranean for thousands of years; however, some populations have shown a dramatic decrease in their size, age and reproductive output in recent years. Genetic studies of *C. rubrum* and some Pacific species have demonstrated significant isolation between some populations and considerable heterozygote deficiencies in some species but not others.

Trade data show the most important producers of *C. rubrum* from 1967 to 2004 have been Italy, Spain and Tunisia, with smaller quantities from France, Morocco, Algeria, Greece, Croatia and Albania. Dredging the seabed in the past to collect *C. rubrum* and other species partly damaged large areas of habitat but these crude methods have reportedly largely been replaced by more selective, less damaging ones. The commercial species in the Pacific occur mainly in Japan, Taiwan (Province of China), the USA and seamounts in international waters; based on trade data the most important species are *C. secundum, Corallium* sp. nov., *C. elatius*, and *Paracorallium japonicum*, with small quantities of *C. konojoi* and *C. lauuense*. They have been subject to rapid exploitation following discovery of commercially viable beds, leading to exhaustion of the resource. After harvesting has been discontinued the populations have shown signs of recovery but, even after a number of years, have not fully recovered. Much of the trade is in the form of processed beads, traditionally processed and exported by Italy but more recently several Asian countries have been involved. The United States is the main importer of *Corallium* products, involving millions of unworked and worked items. Illegal harvesting was a problem in U.S. territorial waters in the past and has been reported with increasing frequency in Spanish waters. The main reported threat to *Corallium* is over-harvesting but secondary human impacts include pollution, sedimentation in the Mediterranean and incidental take and habitat degradation associated with longline fishing and bottom trawling in the Pacific. Rise in sea temperature has been identified as a potential threat in the Mediterranean Sea.

Harvesting of *C. rubrum* is regulated in most countries and the Pacific species are regulated in the Hawaiian Islands and other areas under U.S. jurisdiction, but it is not known whether there are controls on harvesting in Japan, Taiwan (Province of China) and other producer countries. *Corallium* is not managed by any existing regional fisheries management organisations. There are currently no captive breeding programmes for *Corallium,* although artificial substrates have been successfully used to stimulate recolonisation.

Analysis: Coral derived from *Corallium* species is a valuable commodity that is traded in large amounts. Populations of various *Corallium* species, chiefly in the Mediterranean, north-east Atlantic and north-west Pacific, have been exploited for their coral, much of it apparently destined for international trade. This exploitation has often been intensive and, in recent years, some populations have shown very marked decreases in size, age and reproductive output. There remain, however, significant uncertainties regarding the impact of harvest for international trade on *Corallium* species. These uncertainties concern, *inter alia*: the proportion of each species that remains inaccessible to harvest and how changing technologies may in future alter that proportion; the proportion of accessible populations that is not harvested (because it is not economic to do so or because of enforced controls on harvest); rates of recovery of harvested populations and the degree to which species can recolonise areas; the age of reproduction of colonies relative to the age at which they are harvested; the impact of other factors, such as sedimentation, pollution and incidental take, on *Corallium* populations. Because of these gaps in knowledge it is not possible to say with certainty whether or not any *Corallium* species meets the criteria for inclusion in Appendix II set out in Resolution Conf. 9.24 (Rev. CoP 13).

Species of *Corallium* in trade resemble each other, and inclusion of some but not all species in the Appendices would create enforcement problems. Because *Corallium* is harvested from seamounts in international waters, implementation of any listing would require Parties to make non-detriment findings for introductions from the sea.

Supporting Statement (SS)	Additional information
Taxonomy	
26 species are listed: *C. abyssale*, *C. borneense*, *C. ducale*, *C. elatius*, *C. halmaheirense*, *C. imperiale*, *C. inutile**, *C. japonicum**, *C. johnsoni*, *C. kishinouyei*, *C. konjoi*, *C. lauuense, C. maderense*, *C. medea*, *C. niobe*, *C. nix**, *C. reginae*, *C. rubrum*, *C. salomonense**, *C. secundum*, *C. stylasteroides**, *C. sulcatum*, *C. thrinax**, *C. tortuosum**, *C. tricolor*, *C.* sp. nov. * = species now reassigned to the new genus *Paracorallium* *C. regale* is treated as a synonym of *C. lauuense*.	*In addition to those listed in the SS, Cairns (2007) stated that* C. boshuense, C. niveum, C. porcellanum, C. pusillum *and* C. variabile *'would appear to be valid species'.* C. konjoi *(as in the SS): should be spelt* C. konojoi. C. regale: *Baco and Shank (2005) did not treat this as a synonym of* C. lauuense; *Cairns (2007) considered that these two taxa were not synonymous; in any case, if they were to be lumped together* C. regale *has page priority in Bayer (1956), the source of the type descriptions of both species.* C. vanderbilti (*Boone, 1933): is recognised by some authorities as a valid species (e.g. ITIS, 2006) but is a synonym of* Diodogorgia nodulifera *Hargitt, 1901 (see Bayer, 1964).* Corallium sp. nov.: *There are no indications as to why the taxonomic status of this taxon has not been resolved. Even the basis for its inclusion in the genus* Corallium *remains unpublished.* Paracorallium *(Bayer and Cairns, 2003):* Paracorallium *is a valid genus and, if the proposal is adopted, it would be more appropriate to list the seven relevant species under that generic name, in the absence of any good reason to subsume the genus, rather than under* Corallium.
Range	
Corallium species are found throughout the world in tropical, subtropical and temperate oceans, including the Atlantic Ocean, the Mediterranean Sea, the Indian Ocean, the Eastern Pacific Ocean, and the Western Pacific Ocean at depths ranging from 7 to 1,500 m. *Corallium rubrum* is endemic to the Mediterranean and eastern Atlantic, occurring primarily around the central and western basin (7–300 m depth, but most common at 30–200 m) with smaller populations in deeper water (60–200 m) in the eastern basin and off the Atlantic coasts of Africa around the Canary Islands, southern Portugal and around the Cape Verde Islands. SS provides details of other exploited *Corallium* populations including *C. elatius, C. japonicum, C. konojoi, C. lauuense (C. regale), C. secundum* and *C.* sp. nov. in the Western Pacific, including some in international waters. Western Pacific *Corallium* beds are found at two depth zones (90–575 m and 1 000–1 500 m). Isolated colonies of *Corallium* also occur off Australia, the Solomon Islands, Vanuatu, Fiji, Kiribati, Tonga, Samoa, and the Cook Islands at 200–500 m depth; in international waters on the New England Seamount Chain (Atlantic Ocean); and in various waters of the United States, Guam and American Samoa.	*Identified range States for the genus are: Albania, American Samoa, Australia, Bahamas, Brazil, Cape Verde, Cook Islands, Croatia, Fiji, France, Greece, Guam, Indonesia, Ireland, Italy, Japan, Kiribati, Libya, Malaysia, Malta, Mauritania, Mauritius, Mexico, Monaco, Montenegro, Morocco, New Caledonia, Northern Marianas, Palau, Philippines, Portugal: Madeira, Senegal, Slovenia, Solomon Islands, Spain including Canary Islands, Sri Lanka, Taiwan (Province of China), Tonga, Tunisia, Turkey, USA and Vanuatu.*

Supporting Statement (SS)	Additional information
IUCN Global Category	
No species are listed.	*Not assessed.*

Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP 13) Annex 2a)

B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

All *Corallium species* are K-selected deep-sea coral species with life-history characteristics that make them particularly vulnerable to over-exploitation, including extreme longevity (75–100 years), late age of maturity (7–12 years), slow growth (0.2–2 cm in length and 0.24–1.32 mm in diameter per year, with growth rates declining with age), low fecundity and low natural mortality rates (4–7% for *C. secundum* with turnover of populations occurring every 15–25 years). Local populations of *Corallium* spp. are self-seeding and genetically distinct, with occasional long-distance dispersal events maintaining connectivity between sites. Historically, *C. rubrum* colonies frequently attained masses greater than 2 kg and basal diameters of 3–10 cm. Colonies today rarely exceed 20 cm in height and 2 cm basal diameter, because commercial take has removed most large individuals.

Not all the Corallium *species are deep-sea species and therefore not all are necessarily K-selected (Harmelin, 2007). Specimens of a* Corallium *sp. from Davidson Seamount off central California showed a linear growth rate of approximately 0.25 cm/year, leading to a colony age of about 115 years; however, based on the radial growth rate an age of up to 200 years is possible (Andrews* et al., *2005).*

According to Roark et al. *(2006) the growth rates, at least for* C. secundum*, which are used in determining harvest controls, have been overestimated. Grigg (1976, 2002) assumed that growth rings were annual but this is not the case and it is thought that these methods have underestimated the age of larger colonies of* C. secundum *by at least a factor of two.*

The vulnerable life-history characteristics listed in the SS do not apply to all species of this genus. For C. rubrum *the age at maturity and size of colonies is not linked to vulnerability. In fact, maturity of small-sized colonies is the reason why this species is able to maintain abundant populations at low depths in sites which have been exploited for centuries (Harmelin, 2007*).

Santangelo and Abbiati (2001) identified two types of red coral populations: shallow water populations occurring on vertical cliffs and in caves at a depth range between 10 and 60 m and currently consisting of crowded small, slow-growing, short-lived colonies, which are often heavily affected by boring sponges; and deep water populations occurring mainly below 60 m on rocky outcrops, and consisting of large, sparse, long-lived colonies. They stated that only the latter populations have commercial value.

Habitat trends: Deep-water *Corallium* habitats have been impacted by dredges and trawls used to collect corals as well as trawl fisheries targeting seamount and deep sea fishes. In the western Mediterranean, non-selective coral fisheries have degraded the three-dimensional structure created by *C. rubrum* to a 'grass-plain'-like structure from the original forest-like structure that was still apparent 20 years ago. Limited low-impact harvesting has been conducted by submersibles off Hawaii and using SCUBA in the Mediterranean since the 1950s.

Habitat trends: *Pani (2007) considers that degradation of the habitat has happened only locally and cannot be generalised to the whole western Mediterranean.*

A build up of mud on the substrate, caused by the destructive process, limits survival and recruitment of C. rubrum *(Harmelin, 2007)*.

Population size: *Corallium* spp. occur primarily at a low abundance. The only known larger, commercially exploitable populations are reported from the Mediterranean and western Pacific. *C. rubrum* is found in small patches at relatively high abundances in shallow water (10–30 m), and occurs as isolated colonies in deeper water.

At Costa Brava, Spain (20–50 m depth), patch size is small (0.43 m^2) and number of patches is relatively few

Population size: *Apart from density counts there are no overall population estimates of* C. rubrum *in the Mediterranean due to the difficulties of surveying deep-water colonies (Santangelo, 2007a).*

C. rubrum *can occur at high densities at depths of > 100 m in some areas – from photos by ROVs and accounts of professional fishermen in Albania, Algeria and Morocco. The comparison of current densities with*

Supporting Statement (SS)	Additional information
(0.063 patches/m^2), and overall abundance of *C. rubrum* was estimated at 3.4 colonies/m^2. Several decades ago, densities of 55 colonies/m^2 were observed at a depth of 40 m (Palma de Mallorca), 20 colonies/m^2 at 60 m depth along the Costa Brava, and 90–100 colonies/m^2 in Corsica.	*those of 'several decades ago' may be misleading due to the differences in sampling strategy and comparison of the difference sites (Harmelin*, 2007*).*
Deep-water precious coral beds in the United States off Hawaii are found in 16 known areas at depths of 380–575 m, three of which were assessed in 2001. The largest bed off Oahu is dominated by *C. secundum* at densities of 0.3 colonies/m^2, with an overall population size of about 120 000 colonies. Keahole Point Bed covers an area of 0.96 km^2 and contained up to 7 000 legal-sized *C. lauuense* colonies. The summit of Cross Seamount has smaller populations of *C. lauuense* consisting of about 2 500 legal-size colonies; *C. secundum* was also present, but in very low numbers.	*Submarine surveys in the French Frigate Shoals (Hawaiian Islands) found an abundance of pink corals* Corallium *sp. leading to renewed interest in harvesting in the area (Parrish* et al., *2002).*
Population structure: Commercial harvest has decreased genetic diversity within and among populations of *Corallium*, reduced colony densities, and shifted size and age structure to populations dominated by small, immature colonies. A severe lack of older individuals, as observed in all areas with *Corallium* fisheries where surveys have occurred, is an indicator of high mortality due to natural causes or harvesting. *C. rubrum* forms dense, patchy assemblages consisting of small (mean size = 3 cm), short-lived (< 10 years) colonies in shallow water; less than half of these are reproductive, most of which produce tens of planulae per year. In deeper water, *C. rubrum* colonies are larger but less abundant. Large, older colonies may produce hundreds to over 2 000 planulae per year. In non-harvested areas, recruitment rates ranged from 0 to 32 recruits/m^2 per yr between 1995 and 1999, and 0 to 12.5 recruits/m^2 per yr between 1979 and 2000 at a different site. Populations of *C. japonicum* in Makapu'u Bed (Hawaii) were dominated by colonies that were 15–20 years old; the largest colonies were 70 cm in height and 80 years old, and natural mortality rates in absence of fishing were estimated at 6%.	**Population structure**: *Harmelin (2007) noted that he was unaware of any published studies of genetic structure from pristine populations. Costantini* et al. *(in press) found that populations of* C. rubrum *were becoming fragmented as a result of low larval dispersal.* *Santangelo* et al. *(1993) analysed FAO production figures relating to* C. rubrum *for some western Mediterranean countries, and drew attention to fluctuations resulting from the discovery of new banks of coral colonies. Harmelin (2007) notes that they did not analyse data for unexploited populations.* *The study quoted in the SS (Santangelo* et al., *2003), was based on research at one site (Calafuria) and incorrectly concluded that populations of* C. rubrum *in shallow water are characterised by small, short-lived colonies, whereas those in deeper water have an intrinsic capacity to produce larger colonies. It did not take into account the fact that long exploitation of the shallower areas has resulted in the removal of the large colonies, whereas in deeper waters collection of larger colonies has been less intensive. The size of colonies in shallow water in pristine areas and in marine protected areas that have been established for more than 20 years demonstrate that large colonies can develop in shallow water in the absence of collection (Harmelin, 2007).* *The sentence about populations of* C. japonicum *actually refers to* C. secundum *(see Grigg, 1984)*. *Genetic studies of* C. rubrum *populations have indicated moderate but significant isolation between some populations, suggesting that rotational harvesting will significantly alter the genetic stability of populations (Abbiati* et al., *1993), and further genetic research has demonstrated considerable heterozygote deficiency in this species (Costantini and Abbiati, 2006) and in* C. lauuense *in Hawaii (Baco and Shank, 2005). In contrast, populations of* C. secundum *were found to have little heterozygote deficiency and were separated into three distinct regions (Baco-Taylor, 2006).*
Population trends: Global harvest statistics from 1950 to 2001 provide one indication of the rapid decline in abundance of Mediterranean and Pacific species corresponding with the discovery, inception of commercial fishing, increase in landings, over-	**Population trends**: *There are no known studies that correlate harvest rates with fishery efforts for* C. rubrum*: it could be argued that although the statistics show a decline in the landing of* C. rubrum *the species is still common at a certain depth where fishing is almost*

Supporting Statement (SS)	Additional information
exploitation, and, ultimately, exhaustion of the resource. For example, a large bed of *Corallium* discovered in 1978 on the Emperor Seamounts (900–1500 m) was fished by over 100 coral boats during peak years (1979–1981) and production neared 300 t. The resource was rapidly depleted; by 1989 yield dropped to less than 10 t.	*impossible (Assocoral, 2007).*
Harvest of *C. rubrum* in the Mediterranean decreased by 66% between 1985–2001. Throughout the Mediterranean, *C. rubrum* populations have shown a dramatic decrease in their size, age structure and reproductive output over the last 20 years, and the only remaining commercially valuable beds are now found along the African coasts from Morocco to Tunisia, in the Bonifacio Strait off western Sardinia, and along the Spanish coasts.	*According to Pani (2007) statistical decrease is linked not to* C. rubrum *decline, but to the fishing effort, which has decreased considerably in the last 30 years in the Mediterranean. This was due to the ban on the use of the dredging instrument known as the "ingegno" or Saint Andrew Cross and to the fact that, in many countries, fishing is exclusively done by licensed divers that can harvest the species in limited quantities and only between 50 and 100 m. The populations below that depth are completely intact; moreover official statistics do not take into account the finding of dead coral banks generated by the detachment of old or unhealthy coral and transported by currents.*
Most remaining populations in shallow water are characterized by the absence of large colonies, and an overall shift to non-reproductive colonies below the smallest legal size for commercial harvest (mean size throughout the region is now 3 cm).	*Although there is a general deficit of large colonies, and the average size of colonies is limited by the effects of exploitation, they remain well above the size at which they can reproduce. The results quoted in the SS cannot be extrapolated to the whole site, let alone to the whole Mediterranean (Harmelin,* 2007*).*
In Spain, 89% of the colonies in fished areas were below legal size for harvest, 96% showed only rudimentary branching patterns (primary and secondary branches only) and 91% were less than 5 cm in height.	*There are very few studies, if any, on deep water populations (> 50 m depth) of* C. rubrum*, which includes those that are commercially exploited (Garrabou, 2006).*
In France, colony size (basal diameter and height) in non-harvested sites was four times larger and the average height was two times greater than that of corals in harvested areas.	*Bramanti* et al. *(2005) suggest that the populations of* C. rubrum *exhibit a high capacity for colonisation and seem to be quite resilient to environmental variability. Moreover, they found that the Italian population studied reached a diameter of 10 mm in about 16 years.*
In 1971, before commercial harvest, the total population of *C secundum* in Makapu'u Bed (off Hawaii) was estimated at 79 200, with colonies occurring at a mean density of 0.02 colonies/m^2. Between 1974 and 1979 about 40% of the standing stock (17 500 kg) was harvested. Six years after harvesting ceased, colony densities were similar to pre-harvest levels (0.022 colonies/m^2), although colonies were younger and smaller, and colonies over 35 years of age were absent. By 2001, the percent of older size classes (20–45 years) increased, but the oldest colonies (45–55 years) were still under-represented.	*Fleming* et al*. (2003) stated: 'There is no evidence of any decline in the overall area of distribution despite the long history of exploitation to which this species has been subject. Likewise, whilst exploitation has an impact on the size and age structure of populations, it rarely results in their extirpation, though colonies are slow to recover from exploitation. The major evidence for a decline in population is a decline in overall Mediterranean harvests of 40% from 1987–1996. However, if considering the size of colonies as a base to assess population size, there is also a clear decline in the natural populations – because the reproductive individual is the polyp and not the colony.'*
Geographic trends: Most western Pacific populations of *Corallium* have been depleted within 4–5 years of their discovery, leading to a termination of fishing effort as new beds have been discovered. Mediterranean populations of *C. rubrum* off Calabria, Naples, Sardinia, Corsica, and parts of the French and Spanish seacoasts all had significant *Corallium* banks in the 1950s, but most have been over-exploited and are no longer commercially viable. *C. rubrum* has also been extirpated from one location east of Graham Bank (Sicily Channel) and from three banks off the coast of Sciacca (Strait of Sicily) that were discovered between 1875 and 1880 and fished until 1915.	**Geographic trends**: *Harmelin (2007) states that the Sciacca bank is not a good example to demonstrate the effects of exploitation because the bank was constituted by the accumulation of detached colonies, some of which had been dead for a long time and were subfossilised, and the origin of the bank is subject to different theories. Moreover, the muddy bottoms of the banks are incompatible with coral biocenosis. It appears that coral could have accumulated in the banks due to strong currents and to the eruption of the Graham underwater volcano of 1831 (Di Geronimo* et al., *1993).*
Utilisation and Trade: *Corallium*, the most valuable genus of precious coral, is highly valued for jewellery	**Utilisation and Trade**: Corallium *powder is sold to India, Pakistan, Japan and Taiwan (Province of China), where*

Supporting Statement (SS)	Additional information
and art objects. Powdered *Corallium* skeleton, liquid tonics, granules and pills are sold as herbal or homeopathic medicine for a range of uses.	*it is used in traditional medicine, mostly involving Asian species. Coral pieces are also used as biomaterial in bone transplants (Bellaaj and Slimane, 2006*; *Mgaidi, 2006).*
The only known populations of *Corallium* large enough to support commercial harvest are found north of 19° N latitude, including seven species harvested in the Western Pacific and one collected in the Mediterranean; all *Corallium* species identified in the southern hemisphere occur at low abundances. The most valuable species are *C. rubrum*, *C. japonicum*, *C. lauuense*, *C. elatius*, *C. konojoi* and *C.* sp. nov. and the most valuable specimens are those collected when alive. They are harvested in the Mediterranean Sea, mainly from 30–120 m depth, and in the western North Pacific Ocean, in two depth zones: 200–500 m and 1 000–1 500 m. Commercial yields (of all species combined from FAO statistics) peaked in 1984 at 45 mt, declined to 40 mt by 1990 and fluctuated between 28 and 54 mt from 1991–2005.	*The SS refers to seven species that are involved in trade but does not discuss whether any other species may be involved.* C. regale*, which the SS mistakenly treated as a synonym of* C. lauuense*, was referred to by Bayer (1956): 'Of all the Hawaiian precious corals,* C. regale *has the best colour and might be of commercial value if it could be fished in quantity.' However, there is no evidence that this species or any of the other 25 species have been involved in trade.* Paracorallium tortuosum *was noted by Bayer (1956) as 'appears to be the most abundant precious coral in Hawaiian waters but, due to its small size and usually deformed axis, it probably has no commercial possibilities.'*
A fishery for *C. rubrum* has existed in the Mediterranean for about five thousand years, with supplies waxing and waning depending on supply, demand, discovery of new coral banks and political and economic stability of the countries involved.	*There appear to be inaccuracies in the use of FAO production data in the SS. One graph shows Pacific trade pooled for* 'C. japonicum, C. regale, C. *sp. nov*., C. elatius *and* C. konojoi'. *However, figures for* C. regale *are not included in the FAO data, whereas those for* C. secundum *are, and it is the most important species in terms of quantity. Another graph shows harvest data for individual species:* C. rubrum, C. konojoi, C. elatius, C. japonicum *and* C. *sp. nov*. *The species plotted with the highest quantities is* C. konojoi *but this species appears in negligible quantities in the FAO data – the species involved is again* C. secundum*. Pooling the data for each species from 1967–2004 gives the following indication of their relative importance:* C. secundum *(1 891 mt),* C. rubrum *(1 196 mt),* C. *sp. nov*. *(773 mt),* C. elatius *(142 mt),* Paracorallium japonicum *(58 mt),* C. konojoi *(0 mt). Production peaked in 1984 at 404 mt, then declined to 15 mt in 1989, to 0 in 1997 and remained at a low level until 2004, when 15 mt were recorded. The only evidence for the involvement of* C. lauuense *would appear to be the collection off Kona in 2000.*
Corallium fisheries started in the Pacific in 1804 in Japan and expanded over the years, targeting grounds in waters of Japan and Taiwan (Province of China). New beds were discovered north of Midway Island in 1965 and, over the next 20 years, most of the world's harvest came from the Milwaukee Bank and surrounding seamounts. The US harvest figures were not included in the FAO data but for *C. secundum* a total of 1 800 kg was harvested in the years 1966–1969, and 6 427 kg from 1973–1978. Harvest was then discontinued due to high operating costs, but was revived in 1999–2000 using submersibles. In 2000, 1 216 kg of *C. secundum* were collected from the Makapu'u Bed and 61 kg of *C. lauuense* from areas off Kailua, Kona.	*Grigg (2007) suggested that most if not all of the trade in the Pacific (Japan, Taiwan (Province of China) and Hawaii) involves raw material that has been stockpiled for many years and that there is also a large stockpile in Italy.*
Much of the trade is in the form of processed beads and Italy has long been the most important processor and exporter – in 1988 the value of coral exports from Torre del Greco amounted to nearly US$30 billion. Superior beads fetch prices of up to US$50 per gram and necklaces cost up to US$25 000. Processing centres developed in other countries, particularly China and Japan, and the latter imported a peak of 28 t of *Corallium* in 1987, of which 56% came from Taiwan (Province of China). The United States is the major consumer of precious corals, with imports of 428 644 skeletons and 6 742 kg of unworked *Corallium*, and 26 million pieces and 51 456 kg of manufactured items from 2001–2006, mainly from China, Taiwan (Province of China) and Italy.	*Pani (2007) rejects the 1988 figure of US$30 billion – the total turnover of the coral industry of Torre del Greco in 1999 was around 170 million Euro (US$174 million at that time). Of the coral used in Torre del Greco 60% is of Mediterranean origin and 40% of Asian origin. More than 75% of the production is exported.*
	FAO data for 1967–2004 show the following importance of individual countries in the harvest of C. rubrum*: Italy (33.5%), Spain (17.6%), Tunisia (15.3%), France (9.9%), Morocco (8.9%), Algeria (7.7%), Greece (3.6%), Croatia (2.4%), Albania (1.1%). These figures are likely to be an underestimate as suggested by a figure provided for Morocco by Anon. (2006) for 1998 of 3 mt, compared with 1 mt reported by FAO; data provided for Bocche di Bonifacio, Italy by Chessa and Cudoni (1989); and data provided by Pani (apparently based on FAO production data) that give a total for Tunisia of 33 mt from 1998–2004, compared with 14 mt in FAO/FIGIS (2007). Although not featuring in these figures,* C. rubrum *occurs in the Libyan Arab Jamirihiya and the WWF*

Supporting Statement (SS)	Additional information
	Mediterranean Programme Office (2005) noted that a licence was about to be issued to an Italian company to exploit the resource. In the past, the species was harvested in the Cape Verde Islands (Greeff, 1882); there is no recent information about this fishery.
In the past small colonies were rejected by the jewellery industry because they could not be worked; however, new techniques have enabled small fragments to be ground into powder and mixed with synthetic resins to form a paste. This has led to new patterns of exploitation in the Mediterranean involving the removal of undersized corals, their basal attachment, and underlying substrate. Illegal harvesting was a problem in Hawaiian territorial waters in the past and is reported with increasing frequency in Spanish waters.	*In Japan in 1989 the auction prices for different species were:* Paracorallium japonicum, *2.5–3.0 million Y/Kg (US$17 857–21 428/kg,* C. elatius*, 2.0 million Y /kg (US$14 285/kg) and Midway Deep-sea Coral* C. *sp. nov., 20,000 Y Di Geronimo* et al., *1993/kg (US$142/kg) (Anon., 1989a).* *Both Harmelin (2007) and Pani (2007) state that they do not know of any new techinques for working small colonies. However, there may be use of "coral paste" and resins to imitate red coral but containing no* Corallium*.*

Other information

Threats

The primary threat to *Corallium* is over-harvesting for the precious coral trade. For over 5,000 years, the precious coral industry has been characterized by boom and bust patterns. In the Mediterranean, intensive harvesting within the last 200 years has caused a severe depletion of most commercial *C. rubrum* stocks.	*Chouba and Tritar (1998) applied a global production model to the catch and effort data available from Tunisian fisheries for the years 1970 to 1992 and revealed that the fishing effort was clearly higher than the theoretical value found to produce a maximum sustainable yield.*
The current practice of harvesting coral in the Mediterranean with a minimum basal diameter of 7 mm indicates colonies are only 11 years old. This prevents colonies from realizing their maximum potential reproductive output.	*This again refers incorrectly to the Sciacca banks (see Geographic Trends) where only dead coral has been harvested (Pani, 2007).*
Secondary human impacts include pollution, sedimentation, tourism and recreational diving (Mediterranean) and incidental take and habitat degradation associated with longline fishing and bottom trawling (Western Pacific). A mass mortality event in 1999 affected shallow-water populations (< 30 m depth) along 50 km of coastline in the Provence region off France, with overall mortality estimated in the millions of colonies, attributed to a fungal and protozoan disease and linked to temperature anomalies.	*A study of the population dynamics and conservation biology of a population of* C. rubrum *in Italy demonstrated that the population showed high stability and a strong resilience capability, surviving to a 61% reduction of density, to a 27.7% reduction of reproduction rate and to unselective harvesting affecting 95% of the reproductive colonies (Santangelo* et al., 2006). *A study of the effects of spatial variability and colony size on the reproductive output of* C rubrum *found that colonies < 6 cm high were significantly less fertile than colonies > 12 cm high, and a suggestion was made that a minimum height should be incorporated into fishing regulations (Tsounis* et al., *2006).* *The use of dredges and nets was abandoned many years ago in continental France and was last used in Corsica in the 1980s. The highly destructive Saint Andrews Cross is still used in some areas – in Corsica there have been complaints about Sardinian boats and it may used illegally in Algeria (Harmelin, 2007).*

Conservation, management and legislation

The European Union*: Corallium rubrum* is listed in Annex V of the European Union Habitats Directive. In 1994, the European Union banned the use of dredging equipment for the harvest of *Corallium* in the Mediterranean (the *ingegno* or St. Andrews Cross) (Council Regulation No. 1626/94). Harvesting is regulated in Algeria, Italy and Spain.	C. rubrum *is listed in Annex III of the Bern Convention, and Annex III of the Protocol concerning Special Protected Areas and Biological Diversity in the Mediterranean (under the Barcelona Convention). It is fully protected in Gibraltar (Nature Protection Ordinance, 1991) and Malta (Flora, Fauna and Natural Habitats Protection Regulations, 2003) and harvesting is regulated in Croatia, Greece, Morocco and Tunisia (Anon., 1989b). The legislation relating to harvesting in*

Supporting Statement (SS)	Additional information
The Spanish Government has established reserves for the protection of *C. rubrum* in the Mediterranean Sea and has regulated red coral harvesting since the mid 1980s. In 2006, the Spanish Ministry of Agriculture, Fisheries and Food published a new *Ministerial Order for the Integral Fisheries Management of the Mediterranean,* which bans the use of bottom trawling, purse seining and drag netting to 50 m depth.	*Algeria was summarised by Akrour (1989); subsequently it was strictly controlled in 1995 under Décret Exécutif no. 95-323, and then suspended in 2001 under Décret Exécutif no. 01-56, awaiting the results of a study evaluating the resource.* C. rubrum *is not considered threatened in France (Labarraque* et al., *2000). However, the fishery there is subject to management and regulation: collection by diving is generally prohibited, but licences are issued on provisional exemptions, which are subject to annual renewal. In Corsica, the numbers of collectors has been limited to eight and they have agreed to work below 50 m to allow the stocks in shallower waters to recuperate (Harmelin, 2007).*
The United States*:* The Western Pacific Fishery Management Council's (WPFMC) Precious Corals Fisheries Management Plan (FMP) has regulated the harvest of *Corallium* spp. since 1983. The FMP imposes permit requirements valid for specific locations, harvest quotas for precious coral beds, a minimum size limit for pink coral, gear restrictions, area restrictions, and fishing seasons. The Northwest Hawaiian Islands (NWHI) National Monument prohibits taking of precious coral (including pink and red coral) within the Reserve. The State of Hawaii prohibits the take or sale of pink coral without a permit and has established a minimum size (25.4 cm). California prohibits the commercial harvest of *Corallium* spp. Guam prohibits the commercial harvest of all coral species without a permit.	*A number of countries have established marine reserves in which* C. rubrum *is protected, e.g. Cap Couronne in France (Francour* et al., 2001).
There are currently no binding international instruments for the conservation of *Corallium;* it is not listed on any international wildlife or fisheries agreements and has no international legal status. However, in 2004, the member States of the United Nations agreed to take urgent action for the protection of vulnerable marine ecosystems (VMES), such as coldwater corals, in accordance with the precautionary approach through, *inter alia,* the interim prohibition of destructive fishing practices, including bottom trawling, that has adverse impacts on VMES, on a case-by-case and scientific basis, until such time as appropriate conservation and management measures have been adopted. These measures, currently limited to non-binding U.N. General Assembly resolutions, could be greatly strengthened by CITES provisions. Such measures are important given that *Corallium* is not managed by any existing regional fisheries management organizations.	*Sardinia has regional legislation on coral fishing, issued in 1979 and modified in 1989. Thirty coral fishermen were licensed in 2006. The Sardinian Autonomous Government has banned coral fishing for 2007 (Anon., 2007).* *An international research centre studying the biology of the red coral is currently being finalised in Italy by the University of Naples (Pani, 2007).* *It is not known whether harvesting is controlled in Pacific states other than those under United States jurisdiction. This applies particularly to Japan and Taiwan (Province of China), the main producers of* Corallium *in the Pacific.*
<u>Artificial propagation</u>	
Currently there are no captive-breeding programmes for *Corallium.*	*The University of Pisa, Italy has developed and patented a method for coral propagation on artificial substrates (Bramanti* et al*., 2005; Santangelo, 2007b)*
A laboratory for the biological, economic and technical research of precious corals was established in Kochi, Japan, in the early 1990s. Colonies of *Paracorallium japonicum* were maintained alive in culture for over one year but growth rates were very slow and no reproduction occurred.	
A working group of the Stazione Zoologica di Napoli established a laboratory for the rearing and production of new propagules of *C. rubrum* in 1988. They have been conducting experiments on the feeding behaviour of polyps, growth rates, sexual and asexual reproductive processes, recolonization rates and selection of artificial substrata for the settlement of larvae. In addition, recent efforts to rear *C. rubrum* on artificial substrates in the wild may assist in rehabilitating depleted populations.	

Supporting Statement (SS)	Additional information
Other comments	
Bamboo coral has recently appeared on international markets as jewellery, often being dyed pink or red and sold as *Corallium*. Features sufficient for reliable identification at the species level within the genus *Corallium* do not exist for skeletons or as manufactured jewellery and curios, which make up the bulk of the trade. Taxonomic identification of octocorals requires microscopic analysis of shape, size and colour of sclerites (tiny calcified skeletal elements) embedded in the coenochyme and in the organic matrix of the axial skeleton; these are lost when processed for jewellery.	*Bamboo corals are members of the family Isididae, particularly* Lepidisis olapa *and* Acanella *spp. in the Hawaiian Islands (Grigg, 1989). A study of the organic structure of corals is apparently giving good results in characterising the species on the basis of their skeletons, even after the pieces have been polished (Harmelin, 2007).* *An economic model of the precious coral harvest industry in Hawaii, with a focus on* C. secundum*, suggested that the effect of stock size on catch-per-unit-effort and world market prices were the dominant factors governing profitability (Shester and Warren, 2005). They suggested that maintaining lower harvest rates and higher stable stocks relative to current maximum sustainable yield practices would most likely result in greatest long-term profitability of the Hawaiian precious coral harvest if the fishery were to be resumed. Although the harvest in Hawaii has currently ceased, harvest quotas for several coral beds have been established (Western Pacific Regional Fishery Management Council, 2005).*

Reviewers:
R. Grigg, J-G Harmelin, I. Meliane, M. Pani, TRAFFIC Europe, TRAFFIC North America.

Deletion of Arizona Agave *Agave arizonica* from Appendix I.

Proponent: The United States of America.

NB For further discussion on the place of hybrids under the Convention, see Background to analysis of Proposals 34–37

Summary: *Agave arizonica* has been listed in Appendix I since 1987. It is a rare, slow-growing succulent, endemic to the remote mountains of central Arizona, where it is restricted to four counties. The known population numbers fewer than 100 individuals. It has been described as one of the most beautiful agaves in Arizona, and as such has been in demand as an ornamental plant.

First described in 1970, *Agave arizonica* is now considered to be a naturally occurring first generation hybrid between *Agave toumeyana* spp. bella and *A. chrysantha*. It is unknown whether the plant will maintain a separate genetic identity. It has continued to exist in relatively stable populations for over 30 years but has been de-listed from the US Endangered Species Act (ESA) as a non-discrete taxonomic entity that does not meet the definition of a species under the Act, and thus no longer qualifies for protection under it.

The only records of *Agave arizonica* in the CITES Trade Database are of just under 50 exported from the USA in 1987, of which 40 went to the United Kingdom and the remainder to Austria, Canada, France and Germany. All were reported as artificially propagated. The UK Royal Horticultural Society's Horticultural Database indicates that *Agave arizonica* was last offered for sale in UK nurseries in 2000; it is currently offered for sale on one Spanish website.

The proponent seeks to delete *A. arizonica* from Appendix I, on the basis that it is no longer considered a species under the terms of the national legislation within the range State and therefore precautionary measures set out in Resolution Conf. 9.24 (Rev. CoP 13) Annex 4 do not apply – the most pertinent of these being: No species listed in Appendix I shall be removed from the Appendices unless it has been first transferred to Appendix II, with monitoring of any impact of trade on the species for at least two intervals between meetings of the Conference of the Parties (para A1).

Analysis: The proposed deletion of *Agave arizonica from* Appendix I entails agreeing that it is not an entity that has any standing under the Convention (otherwise, Resolution Conf. 9.24 (Rev. CoP 13 would apply). However, Resolution Conf. 11.11 (Rev. CoP 13), concerning regulation of trade in plants, states:

"hybrids shall be subject to the provisions of the Convention even though not specifically included in the Appendices if one or both of their parents are of taxa included in the Appendices, unless the hybrids are excluded from CITES controls by a specific annotation in Appendix II or III."

In this the Parties have implicitly accepted that hybrids are entities equivalent to "species" as treated under the Convention (if they were not, they could not be subject to the provisions of the Convention, nor would they need a specific annotation to be excluded). In this instance, neither presumed parent of *Agave arizonica* is included in the Appendices but *Agave arizonica* itself is. This is a special case and the Parties must decide whether the principle implicit in Resolution Conf. 11.11 (Rev. CoP 13) applies or not. If it does apply, then *Agave arizonica* should be treated in the same way as any other taxon included in Appendix I, that is assessed under the criteria in Resolution Conf. 9.24 (Rev. CoP 13) and, if transferred to Appendix II, subject to the precautionary measures in Annex 4 of that resolution.

'Agave arizonica' appears to meet the biological criteria for inclusion in Appendix I by virtue of its extremely small and fragmented wild population. Although no recent trade has been reported, it has been in international trade and is actually or potentially in demand as an ornamental. However, wild individuals of *Agave arizonica* are reportedly secure from collection because of their inaccessibility and it appears unlikely that collection for international trade would pose a significant threat were it to be transferred to Appendix II.

Supporting Statement (SS)	Additional information
Taxonomy	
Considered to be first-generation hybrid between *Agave toumeyana* spp. *bella* and *A. chrysantha.*	

Supporting Statement (SS)	Additional information
Range	
USA.	
IUCN Global Category	
	Endangered in 1997 IUCN Red List of Threatened Plants *(pre-1994 criteria).*
	Agave arizonica *has not been re-evaluated using the revised Red List categories and criteria.*

Biological criteria for inclusion in Appendix I

A) Small wild population
(i) Population or habitat decline; (ii) small sub-populations; (iii) one sub-population; (iv) large population fluctuations; (v) high vulnerability

Agave arizonica is of rare occurrence with individuals difficult to find and primarily existing as randomly scattered individual clones with no definable population density. Since 1992, total known occurrences have remained at 64 and it is not known to have sexually reproduced in the wild.	*In 1984, when* Agave arizonica *was listed under the Endangered Species Act, 13 populations with 1–7 individual plants each were known, totalling fewer than one hundred individual plants in total (USFWS, 1984).* *Only 50–60 clones or plants have been located (from distinct locations in Arizona) where populations of the two putative parent species overlap (Center for Plant Conservation (CPC), no date).*

B) Restricted area of distribution
(i) Fragmented or localised population; (ii) large fluctuations in distribution or sub-populations; (iii) high vulnerability; (iv) decrease in distribution, population, area or quality of habitat, or recruitment

Agave arizonica is recorded from four counties in central Arizona. It is considered endemic and occurring only where parent species populations overlap, often with large distances between individuals. Restricted range but habitat is remote and relatively inaccessible.	

C) Decline in number of wild individuals
(i) Ongoing or historic decline; (ii) inferred or projected decline

It is unlikely that *Agave arizonica* will maintain a separate genetic identity due to intrinsic biological factors and population estimates have remained static since 1992.	

Trade criteria for inclusion in Appendix I

The species is or may be affected by trade

CITES export has only been recorded in 1987.	*One Spanish web-site was offering the taxon for sale in March 2007 (Anon., 2007).*

Other information

Threats

Grazing by cattle and wildlife, as animals are attracted to its sugar-rich inflorescences. There is currently no information that *Agave arizonica* is being collected or traded domestically for the horticultural trade.	*Collection for cultivation and trade is cited as a threat (NatureServe, 2006a).* *Cattle and deer grazing have severely impacted the ability of* A. arizonica *to produce flowers. In 1988, only 12 of 41 mature plants were able to produce flowers due to trampling and grazing from cattle in the area (CPC, no date).* *ESA protection required a management plan, which included fencing and road closure. Since the taxon has been de-listed from ESA allotment the management plan*

Supporting Statement (SS)	Additional information
	will no longer be enforced (Schwartz, 2007). *A 1976 report apparently identified illegal collection as a threat (CPC, no date), although it is unclear whether this was considered a potential threat, or whether there was evidence of actual illegal collection.*
Conservation, management and legislation	
Mainly found on federal land with a few plants found on private land. *Agave arizonica* has been deleted from US ESA because it is not considered a stable, self-sustaining taxon in the wild but remains a fully sponsored taxon in the US Center for Plant Conservation's National Endangered Plants Collection. Protected by Arizona's Native Plant Law and the Lacy Act.	*NatureServe, which represents a network of biological inventories, gives* Agave arizonica *a Global ranking of Critically Imperilled (G1 – at very high risk of extinction due to extreme rarity (often five or fewer populations), very steep declines, or other factors) (NatureServe, 2006b).* *There is no national recovery plan (USFWS, 2006).*
Similar species	
Neither of its putative parental species are listed under CITES. Putative parent species are protected as salvage-restricted species, which require a collection permit.	*The parents of* Agave arizonica *are common in nature (Hernández, 2007).* Agave parviflora *is currently listed in Appendix I and* Agave victoriae-reginae *in Appendix II.*
Artificial propagation	
Taxon has been artificially propagated from cultivated parental stock.	*It is known to be cultivated in at least 16 botanic garden collections (BGCI, 2007).* *In 1989, two plots in the Tonto National Forest containing ten plants each were watered several times, and then checked annually for establishment. After three years, only one or two plants remained (CPC, no date).* *Powers and Backhaus (1989) reported successful propagation* in vitro *using modified Murashige and Skoog media.*

Reviewers:
H. Hernandez, D. Mahr, S. Oldfield, TRAFFIC North America.

Transfer of Dehesa Bear-grass *Nolina interrata* from Appendix I to Appendix II.

Proponent: United States of America.

Summary: Commonly known as Dehesa or San Diego Bear-grass, *Nolina interrata* is a large succulent with an underground stem that forms a woody caudex and produces many rosettes of long, flat leaves. It is one of 30 or so members of the genus *Nolina*. The species is known from nine populations in a 15.5 km^2 area in San Diego California, USA and from three disjunct populations in northern Baja California, Mexico. There are thought to be a total of 9 000 plants in the nine US populations. Each Mexican population is believed to number around 25 plants, but precise numbers are unknown.

The species is fire-dependent, flowering profusely after wildfires. It is believed that alterations to natural fire periodicity or prevention of prescribed burning may adversely impact its reproductive success, although further studies are needed. Habitat loss is no longer considered a threat to the US populations because all significant populations are located on protected lands. Similar information is not available for Mexican populations. In 1998 it was reported that one of the Mexican populations could be eliminated due to major road construction although its subsequent fate is not known.

The species was included in Appendix I of CITES in 1983. International trade appears to be at a very low level. The only records in the CITES trade database between 1990 and 2005 are the import in 2002 by Slovenia of 12 artificially propagated specimens from the Netherlands. There are no reports of any illegal trade.

The United States proposes the transfer of *N. interrata* from Appendix I to Appendix II in accordance with the precautionary measures in Resolution Conf. 9.24 (Rev. CoP13), particularly Paragraph 2a of Annex 4 (the species is not in demand for international trade, nor is its transfer to Appendix II likely to stimulate trade in, or cause enforcement problems for, any other species included in Appendix I).

Analysis: To be transferred to Appendix II, *Nolina interrata* should no longer meet the criteria for inclusion in Appendix I set out in Resolution Conf. 9.24 (Rev. CoP13). Available evidence indicates that it may no longer meet these criteria. Although it has a relatively small population, this is larger than that suggested in the guidelines in Annex 5 of Resolution Conf. 9.24 (Rev. CoP 13) and is not known to be declining. Its area of distribution is restricted but most populations are reportedly well protected, although the species may remain vulnerable to changing fire regimes. There is no indication of a recent marked decline in numbers. There is evidence of demand for horticulture within one of the range States and the species has featured in international trade. However, the only trade recorded between 1990 and 2005 was in a small number of artificially propagated specimens between non-range States (all in 2002) and no illegal trade has been recorded. There is little evidence for any significant demand for the species outside the range States and it seems unlikely that transferring the species to Appendix II will stimulate collection of plants from the wild, although some concerns have been raised regarding the possibility of seed collection for international trade. The species does not resemble any other Appendix-I listed species and its transfer would not have any impact on any such species.

Supporting Statement (SS)	Additional information
Taxonomy	
Range	
Mexico and USA.	
IUCN Global Category	
	Vulnerable in 1997 *IUCN Red List of Threatened Plants (pre-1994 criteria).* *The species has not been re-evaluated using the revised Red List categories and criteria.*

Supporting Statement (SS)	Additional information
Biological criteria for inclusion in Appendix I	
A) Small wild population	
(i) Population or habitat decline; (ii) small sub-populations; (iii) one sub-population; (iv) large population fluctuations; (v) high vulnerability	
Mexican populations (of which there are three) are estimated to have fewer than 25 plants each. In the USA known from nine occurrences. The size of populations is difficult to determine but estimated to total around 9 000 plants. Not all populations have been assessed to date. Smaller populations may be vulnerable to residential development as well as other stochastic events and since the species is fire-dependent it is increasingly vulnerable to sustained fire prevention and the eventual and unpredictable fires that do occur.	*At least one known small population is a unisexual clone representing a single genetic individual that covers an area of one-quarter acre (0.1 ha) or more (CDFG, 2000).* *Narrow endemic species with low population densities and fire-dependent reproduction making it highly vulnerable (Hernández, 2007).*
B) Restricted area of distribution	
(i) Fragmented or localised population; (ii) large fluctuations in distribution or sub-populations; (iii) high vulnerability; (iv) decrease in distribution, population, area or quality of habitat, or recruitment	
Narrow endemic with limited distribution in the interior foothills of San Diego County, California and in Baja California in Mexico. Some areas of habitat in the US not under any protective status, and populations on private lands may be vulnerable to development. However, two-thirds of all populations are located on protected lands where habitat is considered stable and unthreatened by urbanisation. Access to wild populations is said to be difficult due to rugged terrain. Information on habitat trends in Mexico is unknown. It was reported that road construction could eliminate a population in Mexico in 1998. It is unknown whether road construction has occurred.	*Urbanisation and agricultural expansion are continuing threats (Center for Plant Conservation (CPC), no date).* *The status in 1999 of* N. interrata *was reported as stable to declining (CDFG, 2000).*
C) Decline in number of wild individuals	
(i) Ongoing or historic decline; (ii) inferred or projected decline	
Sustained fire prevention is a threat and projected to affect the species.	*Altered fire regimes could lead to decrease in wild population (Hernández, 2007).*
Trade criteria for inclusion in Appendix I	
The species is or may be affected by trade	
According to several sources the collection of wild plants for the nursery trade is considered a threat to the species and Mexican officials expressed concern over the potential increase in collection of and trade in wild seeds resulting in a transferral from Appendix I to II. There is little evidence suggesting demand for the species in the nursery trade (this may be due to current protective measures) and little evidence that the species is artificially propagated on a commercial scale. There is no evidence to suggest that plants and seeds for the nursery trade are wild-collected. From 1994–2006 the US reported no export. CITES trade data reports 16 trades, all in artificially propagated specimens and all in 2002.	*International trade appears to be at a very low level, with the only trade recorded in the CITES Trade Database between 1990 and 2005 being the import in 2002 by Slovenia of 12 artificially propagated specimens from the Netherlands. There are no reports of any illegal trade.* *There is limited interest in plants of the genus* Nolina *in Europe and elsewhere, as specimen plants both indoors and outside in arid, warm environments. Most interest appears to be in larger species and there is no evidence of a significant collectors' market for the genus (Jenkins, 2007).*

Supporting Statement (SS)	Additional information
Precautionary measures	
CoP satisfied with precautionary measures in Annex 4 of Resolution Conf. 9.24 (Rev. CoP13)	
The supporting statement believes that the precautionary measures in paragraph A.2.a of Annex 4 of Resolution Conf. 9.24 (Rev. CoP13) will be met, namely that the species is not in demand for international trade, nor is its transfer to Appendix II likely to stimulate trade in, or cause enforcement problems for, any other species included in Appendix I and also that there are appropriate enforcement controls and compliance with the requirements of the Convention.	*There is limited interest in plants of the genus* Nolina *in Europe and elsewhere, as specimen plants both indoors and outside in arid, warm environments. Most interest appears to be in larger species and there is no evidence of a significant collectors' market for the genus (Jenkins, 2007). No other species of* Nolina *is included in Appendix I.* *The species is legally protected in both range States (see below).*
Other information	
Threats	
Habitat loss due to construction on private lands or on lands not protected by national laws. Fire prevention is threatening reproduction ability of the species. Potential wild collection for nursery trade.	*Urbanisation and associated habitat loss and further habitat fragmentation are no longer considered significant threats but collection of wild plants for trade and altered fire regimes have been identified as threats (NatureServe, 2006a).* *According to Mahr and Barth (2007), smaller populations on private lands are potentially subject to exploitation or loss through development.* *Continued fire prevention (USFWS, 1998).* *Reduction of genetic variability (USFWS, 1998).* *Potentially threatened by the collection of wild seeds and altered fire regimes that could kill adult plants (Hernández, 2007).*
Conservation, management and legislation	
Species listed under the California Endangered Species Act, 2006. Collection and sale of wild-collected specimens is prohibited. Listed as endangered in California under the Native Plant Protection Act since 1979. Under this law, museums in California are not allowed to sell wild-collected plants and parts of the species. US Lacy Act of 1981 also provides protection for the species. On private lands, permits may be issued to land owners to salvage plants before adverse impact occurs. US populations are periodically monitored but not all populations have been assessed to date. In Mexico, species is protected under NOM-059–SEMARNAT, 2001.	*NatureServe, which represents a network of biological inventories, gives the species a global ranking of Critically Imperilled (G1 - at very high risk of extinction due to extreme rarity (often five or fewer populations), very steep declines, or other factors) (NatureServe, 2006b).* *In Mexico the species is covered under NOM-059-ECOL-2001. This law provides three categories of protection. Endangered (the highest protection which limits the use of the species), Threatened (which limits but allows certain uses) and Special Protection (for a species or population that may become threatened in the short term and may need monitoring or conservation action).* N. interrata *is protected under the category Special Protection and is classified as an endemic species (TRAFFIC North America, 2007).* *In the US the species is covered by the Multiple Species Conservation Plan. This means than 100% of the McGinty Mountain population, 90–100% of the Sycuan Peak population, 80–100% of the Dehesa Peak population will be conserved. These protections led to the withdrawal of a proposal to list* N. interrata *on the Endangered Species Act (USFWS, 1998).*
Similar species	
Nolina parryi is similar in appearance.	*There are about 30 species in the genus occurring in the southern United States and Mexico. Further study is needed on* Nolina *throughout its range. Some species of* Nolina *are extremely infrequent. Some are on federal and/or state rare and endangered species*

Supporting Statement (SS)	Additional information
	lists, and possibly some of those listed by a state should be listed federally (Flora of North America, 2003).
Artificial propagation	
Limited trade data indicate that the species is artificially propagated. Other species of *Nolina* are propagated. Little evidence that *N. interrata* is artificially propagated on a commercial scale.	*Within the USA, there is reportedly significant horticultural interest in* N. interrata *as its small size (it is the smallest* Nolina*) is considered to make it particularly useful for landscaping. Rancho Santa Ana Botanic Garden in California grows the species from seed collected via permit from State-owned land, and receives numerous requests for it (O'Brian, 2007).* N. interrata *was not on any nursery lists of available plants that staff at the garden were aware of (O'Brian, 2007).* *It is know to be cultivated in at least five botanic garden collections (BGCI, 2007).*
Other comments	
Need more research into the role of the species in the ecosystem.	*Transplanting may be necessary to augment reproduction in populations of the same sex (CPC, no date).* *More research is needed into fire management and reproduction of the species. Wildfire has also been noted to induce mass flowering in related species (CDFG, 2000).* *Mahr and Barth (2007) contend that the rarity of horticulturally interesting plants increases their desirability and in future people will be willing to pay a substantial premium thereby increasing trade in the species.*

Reviewers:
H. Hernandez, D. Mahr, S. Oldfield, TRAFFIC North America.

Deletion of *Pereskia* species and *Quiabentia* species from Appendix II.

Proponent: Argentina.

Summary: *Pereskia* and *Quiabentia* are two genera of cacti. *Pereskia* (along with the genus *Miahuenia*) belongs to the subfamily Pereskioideae and *Quiabentia* belongs to the subfamily Opuntioideae. They, along with the genus *Pereskiopsis* (the subject of proposal 25) are distinctive amongst cacti in bearing persistent, recognisable, relatively large leaves for at least part of their growth cycle (other members of the sub-family Opuntioideae bear rudimentary leaves, often only near the growing tips of the stems). The species range in growth form from shrubs to small trees and, in the case of *P. aculeata*, a climbing vine. Currently some 17 members of the genus *Pereskia* and two members of the genus *Quiabentia* are recognised. The former genus is widespread in Central and South America and the West Indies. *Quiabentia* species occur in the southern part of South America in Argentina, Bolivia, Brazil and Paraguay. One species of *Pereskia* (*P. aculeata*) grows wild in the USA, notably in Florida, but is unlikely to be native. This species is established in the wild outside the Americas and is considered an invasive weed.

Both genera have been included in Appendix II since 1975 under the general listing of the family Cactaceae. The genera were the subject of proposals submitted by Switzerland for consideration at CoP12, one to exclude the entire subfamily Opuntioideae and one to exclude the subfamily Pereskioideae and the genera *Pereskiopsis* and *Quiabentia* (that is all the 'leafy' cacti) from the appendices. Both proposals were withdrawn. Subsequently the genera have been included in the periodic review of the Appendices conducted by the Plants Committee. Argentina, a range State for both genera, submitted preliminary information on them to the Plants Committee in 2006.

These plants are subject to a variety of local uses and some are grown as ornamentals both within and outside range States. Those forms that are widely in cultivation are very easy to propagate. There is little demand for other species amongst specialist collectors. Very little trade in wild-collected plants of any of the species has been recorded in the CITES Trade Database during 1995–2005.

The proposal aims to simplify implementation of the Convention with regards to cacti by removing these genera from Appendix II on the grounds that there is insignificant international trade in wild-collected plants of these taxa, that such trade as exists is neither unsustainable nor poses a threat to the species concerned, and that these taxa can easily be distinguished from other cacti and particularly from all species in Appendix I.

Analysis: No species of *Pereskia* or *Quiabentia* is known to meet the criteria for inclusion in Appendix II set out in Resolution Conf. 9.24 (Rev. CoP13) Annex 2 a – in no case is regulation of international trade known to be necessary to prevent any species becoming eligible for inclusion in Appendix I, or to prevent harvest from the wild reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.

It appears that, in general, these cacti, when in leaf, are easily distinguishable from other cacti. When in a leafless state *Quiabentia* species could be confused with some other cacti in the subfamily Opuntioideae (chiefly because of the presence of glochids, distinctive barbed spines in clusters found in the group); however, they could not be confused with any cactus included in Appendix I, nor with any Appendix-II species known to be traded in any number. *Pereskia,* in a leafless state, is unlikely to be confused with any other cactus and is unlikely to be easily recognised as a cactus at all, nor does it resemble any other plant included in the Appendices. It therefore appears that no species in either genus meets the criteria for inclusion in Appendix II set out in Resolution Conf. 9.24 (Rev. CoP13) Annex 2b.

Supporting Statement (SS)	Additional information
Taxonomy	
CITES Cactaceae Checklist recognises 18 species of *Pereskia* and two species of *Quiabentia.*	
Range	
Pereskia: Argentina, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, French Guiana, Guatemala, Guyana, Honduras, Haiti, Mexico,	

Supporting Statement (SS)	Additional information
Netherlands Antilles, Nicaragua, Panama, Peru, Puerto Rico, Paraguay, Suriname, El Salvador, Trinidad and Tobago, USA, Uruguay, Venezuela, Virgin Islands (U.S.), Lesser Antilles. *Quiabentia:* Brazil, Argentina, Bolivia, Paraguay.	
IUCN Global Category	
Pereskia quisqueyana endangered (E) in the *1997 IUCN Red List of Threatened Plants*. No species of *Quiabentia* is listed as rare or endangered.	Pereskia aculeata, P. bahiensis, P. grandiflora *and* P. stenantha: *Least Concern (Assessed 2002, Criteria version 3.1)* P. aureiflora: *Vulnerable A2c+3c (Assessed 2002, Criteria version 3.1)* Q. zehntneri: *Least Concern (Assessed 2002, Criteria version 3.1)*

Biological and trade criteria for retention in Appendix II (Res. Conf. 9.24 (Rev. CoP13) Annex 2 a)

A) Trade regulation needed to prevent future inclusion in Appendix I
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

Pereskia quisqueyana, endemic to the Dominican Republic, is naturally rare. Up to 1999, when a female individual was discovered, only a single male individual was known and propagated vegetatively in a few places. After that, seeds were produced. International trade in wild-collected specimens is not considered a threat. Only a few specimens have been exported for scientific purposes (exports total 10 live specimens 1995–1996) and reported trade under CITES implies that this small quantity was non-detrimental. It is subject to a specific conservation program and can be regarded as quite safe. Quantities of reported trade in all species seem negligible and are not likely to have any measurable impact on most populations. 1995: five shipments from Dominican Republic, with a total of eight specimens of *Pereskia portulacifolia*, two specimens of *P. quisqueyana* and two specimens without indication of species. 1996: Dominican Republic of eight live specimens of wild origin of *Pereskia portulacifolia* and eight of *P. quisqueyana*. 1997: one wild collected live specimen *Pereskia* spp. from Argentina. 1999: three dried wild specimens of *Pereskia aculeata* from Guatemala and one dried wild specimen of *Pereskia lychnidiflora* from Costa Rica. 2002: export of four wild specimens from Peru. *Quiabentia* spp. 1975–2005: no export of specimens of wild origin is reported. 1988. 124 live artificial propagated specimens of *Quiabentia verticillata* from Peru (not a range State of *Quiabentia* spp.). Deletion of *Pereskia lychnidiflora* from the Appendices would not be likely to create negative effects on the conservation of this species (PC16 Inf. 6). The same conclusion is drawn for *P. sacharosa, P. aculeata, P. nemorosa* and *Quiabentia verticillata* in Argentina.	*Plants are subject to a variety of local uses and some are grown as ornamentals both within and outside range States. Those forms that are widely in cultivation are very easy to propagate. There is little demand for other species amongst specialist collectors (IUCN/SSC and TRAFFIC, 2002).* *The following comments for five species of* Pereskia *and* Quiabentia zehntneri *are included in the IUCN Red List of Threatened Species (2006):* Pereskia aculeata *is a common, widespread species, which is an aggressive invader in parts of the world where it has been introduced.* P. aureiflora *appears to be rare within its extent of occurrence, except in north-eastern Minas Gerais, in the Rio Jequitinhonha valley, where considerable habitat modification is taking place.* P. bahiensis *is fairly widespread and common and has been taken into cultivation as a hedge plant in the region where it is native.* P. grandiflora *has a poorly known natural range, probably through early destruction of its habitat and for the uncertainty as to its native status caused by its widespread introduction as a cultivated ornamental. It has been taken into cultivation as a hedge plant in the region where it may be native.* P. stenantha *is fairly widespread and common. It has been taken into cultivation as a hedge plant in the region where it is native.* Quiabentia zehntneri *is a common widespread species.* *There is no commercial interest in* P. aculeata*,* P. nemorosa*,* P. sacharosa*,* Q. verticillata (*from periodic review PC 16) and probably no international trade of whole field-collected individuals of* Pereskia*, only branches, cuttings, stem segments and propagated plants are likely to be in trade (IUCN/SSC and TRAFFIC, 2002).*

Supporting Statement (SS)	Additional information

Retention in Appendix II to improve control of other listed species

A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP13) Annex 2a or listed in Appendix I

Listed in Appendix II of CITES under Cactaceae spp.

Pereskiopsis is the only other leaf-bearing Cactaceae genus. *Pereskia*, *Pereskiopsis* and *Quiabentia* can be easily distinguished from the rest of Cactaceae. *Pereskiopsis* can be distinguished from *Pereskia* for the presence of glochids (small, brittle spines) and green stems (without peridermis).
Pereskiopsis is also proposed for deletion from the Appendices (see Proposal 25 and analysis).

Both taxa are included in the Periodic Review of the Appendices data available so far (PC 16 Inf. 6 and Inf. 7) support this proposal.

Quiabentia *could be confused in a leafless state with some* Opuntia *spp. by non-experts. In whatever state (i.e. in leaf of not),* Pereskia *would probably not be identified as a cactus by most non-experts and would therefore not be confused with any other species cactus (IUCN/SSC and TRAFFIC, 2002).*

Other information

Threats

No direct threat through targeted harvest is known.

Pereskia:
Pereskia quisqueyana from Dominican Republic is naturally rare and could become endangered due to its extremely small and exposed habitat on a shoreline near a village with sand beaches. International trade in wild-collected specimens is not considered a threat.

In Brazil, *Pereskia aureiflora*, a native species of the caatinga vegetation, is reported to suffer from forest clearance for agriculture. It is however probably not very rare and international trade in wild-collected specimens is not considered a threat.

Quiabentia:
No species of *Quiabentia* is listed as rare or endangered. The conservation status of *Quiabentia zehntneri* was assessed in 2004 and is Least Concern.

Seasonally dry, deciduous tropical forests of Central and South America and the Caribbean are under pressure. This habitat is cleared and converted into farmland or consumed by urbanisation in many places and the total surface is already considerably reduced.

In Argentina, Pereskia nemerosa *is common but may be adversely affected by agriculture (IUCN/SSC and TRAFFIC, 2002).*

Conservation, management and legislation

No specific protection by national legislation, e.g. in Mexico, is reported (document PC16 Inf. 6). Regulation of land use may contribute to conservation in some places.

Listed in Appendix II of CITES under Cactaceae spp.

Pereskia quisqueyana from Dominican Republic is subject to a specific conservation program and can be regarded as quite safe. This is the only species that seems to require specific monitoring.

Species of Quiabentia *and* Pereskia *both occur in protected areas in Paraguay, although neither genus is specifically protected under Paraguayan legislation (IUCN/SSC and TRAFFIC, 2002).*

Artificial propagation

Pereskia quisqueyana and other species are artificially propagated in and outside their range States on a very limited scale. Demand is very low and mostly restricted to botanical gardens.

Reviewers:
TRAFFIC East/Southern Africa.

Deletion of *Pereskiopsis* species from Appendix II.

Proponent: Mexico.

Summary: *Pereskiopsis* is a genus of cactus in the subfamily Opuntioideae (the prickly pears and their relatives), comprising six or seven currently recognised species, all except one occurring only in Mexico. The exception, *P. kellermanii,* is found in Mexico and El Salvador. *Pereskiopsis* have relatively thin, often woody, branching stems and range from sub-shrubs around 0.5 m high to small trees up to 4 m high. In their mature state they do not exhibit conspicuous succulence. They are also distinctive amongst cacti in bearing recognisable, relatively large leaves for at least part of their growth cycle, a characteristic shared by plants in the genera *Pereskia* and *Quiabentia*, the subjects of Proposal 24 (other members of the sub-family Opuntioideae bear rudimentary leaves, often only near the growing tips of the stems). The genus has been included in Appendix II since 1975 under the general listing of the family Cactaceae.

The genus was the subject of two proposals submitted by Switzerland for consideration at CoP12, one to exclude the entire subfamily Opuntioideae and one to exclude the subfamily Pereskioideae and the genera *Pereskiopsis* and *Quiabentia* (that is all the 'leafy' cacti) from the appendices. Both proposals were withdrawn. Subsequently the genus has been included in the periodic review of the Appendices conducted by the Plants Committee. Mexico, the major range State for the genus, has undertaken a review of the status and trade in the genus which was submitted to the Plants Committee in 2006 and which forms the basis of the current proposal. The report stated that none of the species was considered threatened with extinction in Mexico, with little local use, other than harvest and consumption of fruits of some species.

Although all species are believed to be in cultivation there is little collector interest in the genus and no recorded demand for wild-collected plants. All species can apparently be easily propagated by seed or cuttings. One taxon, usually known as *Pereskiopsis spathulata* and generally considered to be of horticultural origin but sometimes considered a synonym of *P. diguetii,* is widely used as a rootstock for grafting other cacti. It is reportedly readily propagated from cuttings. Recent reported international trade in the genus under CITES is negligible, with just over 100 specimens reported in trade in the period 1995–2005, none from a range State and all but 10 (declared as *Pereskiopsis* spp.) declared as *P. spathulata* or *P. diguetii*.

Analysis: No species of *Pereskiopsis* is known to meet the criteria for inclusion in Appendix II set out in Resolution Conf. 9.24 (Rev. CoP13) Annex 2a – in no case is regulation of international trade known to be necessary to prevent any species becoming eligible for inclusion in Appendix I, or to prevent harvest from the wild reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.

Although it is conceivable that some *Pereskiopsis* in a leafless state could be confused with some other cacti in the subfamily Opuntioideae (chiefly because of the presence of glochids, distinctive barbed spines in clusters found in the group), they could not be confused with any cactus included in Appendix I, nor with any Appendix-II species known to be traded in any number. The fact that recorded international trade in the genus is negligible also means that it is unlikely that removing it from the Appendices will cause enforcement problems for species that remain in the appendices. It therefore appears that no species in the genus meets the criteria for inclusion in Appendix II set out in Resolution Conf. 9.24 (Rev. CoP13) Annex 2b.

Supporting Statement (SS)	Additional information
Taxonomy	
Six species: *Pereskiopsis aquosa, P. blakeana, P. diguetii* (including *P. spathulata*), *P. kellermanii, P. porteri, P. rotundifolia.*	*CITES Cactaceae checklist (1999) recognises* P. spathulata *as a separate species.*
Range	
Mexico; *P. kellermanii* also in El Salvador.	
IUCN Global Category	
	Not evaluated.

Supporting Statement (SS)	Additional information

Biological and trade criteria for retention in Appendix II (Res. Conf. 9.24 (Rev. CoP13) Annex 2a)

A) Trade regulation needed to prevent future inclusion in Appendix I
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

There is virtually no international trade in any of the species. Moreover, there is no evidence of illegal trade, nor any evidence that these species constitute an intensely used resource.	*Although all species are believed to be in cultivation there is little collector interest in the genus and no recorded demand for wild-collected plants. All species can apparently be easily propagated by seed or cuttings. One taxon, usually known as* Pereskiopsis spathulata *and generally considered to be of horticultural origin but sometimes considered a synonym of* P. diguetii*, is widely used as a rootstock for grafting other cacti. It is reportedly readily propagated from cuttings (IUCN/SSC and TRAFFIC, 2002). Recent reported international trade in the genus under CITES is negligible, with just over 100 specimens reported in trade in the period 1995–2005, none from a range State and all but 10 (declared as* Pereskiopsis *spp.) declared as* P. spathulata *or* P. diguetii*.*

Retention in Appendix II to improve control of other listed species

A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP13) Annex 2a or listed in Appendix I

Removing these species from the CITES Appendices will have no negative impact, either on the species themselves or on other cactus species. *Pereskia* and *Quiabentia* are the only other leaf-bearing Cactaceae genera. *Pereskia*, *Pereskiopsis* and *Quiabentia* can be easily distinguished from the rest of the Cactaceae. *Pereskiopsis* can be distinguished from *Pereskia* from the presence of glochids (small, brittle spines) and green stems (without peridermis). *Pereskia* is also proposed for deletion from the Appendices (see Proposal 24 and analysis). They are a group that is easily distinguished from other cacti, and none of the six species is threatened.	Pereskiopsis *could conceivably be confused in a leafless state with some* Opuntia *spp. by non-experts. None of the species can be confused with any cactus species currently included in Appendix I (IUCN/SSC and TRAFFIC, 2002).*

Other information

Threats

None of the species faces any direct threat, such as selective collection, since they are not of ornamental value. Moreover, most of the species of this genus may benefit to some extent from disturbance, as evidenced by the fact that they can be found even along roadsides.	

Conservation, management and legislation

Listed in Appendix II of CITES under Cactaceae spp. since 1 July 1975. None of the species are included in the Mexican endangered species list (Norma Mexicana Oficial NOM-059-SEMARNAT-2001). *Pereskiopsis* is covered by general legislation and regulations governing wildlife and forest vegetation, including the General Wildlife Act, the Federal Criminal Code, the General Sustainable Forestry Development Act, Standard NOM-005-SEMARNAT-1997 and Standard NOM-126-SEMARNAT-2001. *Pereskiopsis aquosa*, owing to its importance as a food and medicinal plant, is also regulated by Official Mexican Standard NOM-007-SEMARNAT-1997, which	

Supporting Statement (SS)	Additional information
establishes the procedures, criteria and specifications for the use, transport and storage of branches, leaves or stalks, flowers, fruits and seeds. *Pereskiopsis aquosa* grows in the Sierra de Manantlán Biosphere Reserve (Jalisco), *P. porteri* in the Sierra La Laguna Biosphere Reserve (Baja California Sur) and *P. kellermanii* in the Cuxtal Ecological Reserve (Yucatán) and in Huatulco National Park (Oaxaca). *P. blakeana*, *P. rotundifolia* and *P. diguetii* are not known to occur in any areas of protected habitat however, spatial analysis of potential distribution suggests their presence in various protected areas.	
Artificial propagation	
The few trade records found in the CITES Trade Database on individuals propagated artificially concerned plants from Germany, Spain and Thailand.	

Reviewers:
TRAFFIC East/Southern Africa

Merging and amendment of annotations #1, #4 and #8 to read:

"Designates all parts and derivatives, except:

a) seeds, spores and pollen (including pollinia), except seeds of Mexican Cactaceae spp. originating in Mexico;

b) seedling or tissue cultures obtained *in vitro*, in solid or liquid media, transported in sterile containers;

c) cut flowers and cut leaves (excluding phylloclades and other stem parts, and pseudobulbs) of artificially propagated plants;

d) fruits and parts and derivatives thereof of naturalized or artificially propagated plants of the genera *Vanilla* (Orchidaceae), *Opuntia* subgenus *Opuntia, Hylocereus* and *Selenicereus* (Cactaceae);

e) separate stem joints (pads), stem sections and flowers and parts and derivatives thereof of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia*, and *Selenicereus* (Cactaceae);

f) finished products that are packaged and ready for retail trade (excluding whole or grafted specimens, seeds, bulbs and other propagules) of *Aloe* spp., *Aquilaria malaccensis*, Cactaceae spp., *Cibotium barometz, Cistanche deserticola, Cyclamen* spp., *Dionaea muscipula, Euphorbia* spp., *Galanthus* spp., Orchidaceae spp. and *Prunus africana*; and

g) non-living herbarium specimens for non-commercial purposes."

Proponent: Switzerland.

Summary: For plant species in Appendix II, under the terms of the Convention only those parts and derivatives that are specified by annotations to the Appendices are regulated under CITES. A number of different annotations now apply to different plants in Appendix II. The annotations that currently stand are a result of successive modifications to the Appendices and some plants, particularly in higher taxon listings such as that for Orchidaceae, are subject to more than one annotation. It has been recognised for some time that there is some inconsistency in the use of these annotations, that interpreting some of them may be difficult, that some may give rise to enforcement problems, and that some may cover parts and derivatives that need not be regulated under CITES. A review has taken place under the direction of the Plants Committee, specifically dealing with annotations for medicinal plants, to try to solve some of these problems. The review has resulted in Proposal 27 (qv.), which proposes various amendments to current annotations #1, #2, #3, #7, #8 and #10.

This proposal deals with current annotations #1, #4 and #8. Annotation #1 applies to a range of plant taxa, annotation #4 to the family Cactaceae and annotation #8 to the family Orchidaceae. The proposal therefore overlaps with Proposal 27 in the case of annotations #1 and #8.

#1 is currently: 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; and
c) cut flowers of artificially propagated plants;

#4 is currently: Designates all parts and derivatives, except:
a) seeds, except those from Mexican cacti originating in Mexico, 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;
d) fruits and parts and derivatives thereof of naturalized or artificially propagated plants; and
e) separate stem joints (pads) and parts and derivatives thereof of naturalized or artificially propagated plants of the genus *Opuntia* subgenus *Opuntia*;

#8 is currently: Designates all parts and derivatives, except
a) seeds 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
d) fruits and parts and derivatives thereof of artificially propagated plants of the genus *Vanilla*;

Much of the proposal entails a reconciliation of existing annotations to avoid duplication of wording in the Appendices but some new exemptions are also proposed. These are:

1. Cut leaves of all artificially propagated taxa currently covered by annotations #1, #4 and #8, excluding phylloclades and other stem parts, and pseudobulbs.

2. Fruits and parts and derivatives thereof of naturalized or artificially propagated plants of *Hylocereus* spp. and *Selenicereus* spp. (Cactaceae) (currently covered by annotation #4).

3. Separate stem joints, stem sections and flowers and parts and derivatives thereof of naturalized and artificially propagated plants of the genus *Selenicereus* (Cactaceae) (currently covered by annotation #4).

4. Finished products that are packaged and ready for retail trade (excluding whole or grafted specimens, seeds, bulbs and other propagules) of: *Aloe* spp., *Aquilaria malaccensis,* Cactaceae, *Cibotium barometz, Cistanche deserticola, Cyclamen* spp., *Dionaea muscipula, Euphorbia* spp., *Galanthus* spp., Orchidaceae and *Prunus africana* (all currently covered by #1 except Orchidaceae, covered by #8).

5. Non-living herbarium specimens for non-commercial purposes.

Additional observations and analysis on substantive changes 1-5

1. *Cut leaves of all artificially propagated taxa currently covered by annotations #1, #4 and #8, excluding phylloclades and other stem parts, and pseudobulbs.*
The supporting statement notes that actual reported trade in cut leaves is principally composed of artificially propagated cycad leaves that are exported from Costa Rica, and of wild-collected, dead (before harvest) *Aloe ferox* leaves that are exported from South Africa (such wild-collected, dead "cut" leaves are outside the scope of this proposal).

Analysis: A draft proposal to this effect, with an expanded supporting statement, was submitted for consideration at the 15th meeting of the Plants Committee, held in 2005. The Committee noted that artificially propagated leaves may be difficult to distinguish from wild ones; that unlike cut flowers, excessive harvesting of foliage may be detrimental to plants; that interpreting the levels of trade in leaves of CITES-listed species and its non-detrimental nature may be problematic; and that it remained unclear what the status of fragmented, broken or shredded leaves would be. The current proposal also introduces the technical terms 'phylloclades' (applied to the leaf-like stems of certain Cacti) and 'pseudobulbs' (swollen parts of the stem found in many orchids). Identifying these and distinguishing them from leaves without further guidance may be problematic and could create enforcement problems.

2. Fruits and parts and derivatives thereof of naturalized or artificially propagated plants of* Hylocereus *spp. and* Selenicereus *spp. (Cactaceae).
Fruits of artificially propagated *Hylocereus* and *Selenicereus* are already traded in considerable amounts as a commercial fruit crop, principally from countries in Australasia and south-east Asia outside the natural range of the Cactaceae. In addition to these species and *Opuntia* (subgenus *Opuntia*) (whose fruits are already exempt from the Convention under annotation #4), the fruits of one other cactus species, *Cereus peruvianus*, are known to be grown as a commercial fruit crop for export in Israel, albeit in small quantities (Mizrahi and Nerd, 1999). The fruit is traded under the name of koubo.

Analysis: It seems unlikely that exempting trade in fruit of artificially propagated *Hylocereus* and *Selenicereus* from the provisions of the Convention would cause problems for wild populations of any species listed in the Appendices.

3. Separate stem joints, stem sections and flowers and parts and derivatives thereof of naturalized and artificially propagated plants of the genus* Selenicereus *(Cactaceae).
The CITES Cactaceae checklist lists 18 accepted species of *Selenicereus* and nine provisionally accepted. The genus is distributed widely in Central and South America and the Caribbean. No species is currently included in the IUCN Red List of Threatened Species. Various species and hybrids are very widely grown as ornamentals although little trade in live specimens is recorded in the CITES Trade Database (just over 600 in total in the period 1996–2005, most originating outside any range State). As noted in the Supporting Statement, plants in the genus are used in the medicinal plant trade and some trade in parts and derivatives has been recorded in the database, mostly originating outside any range State. Flowers of *Selenicereus* are ephemeral and would not be traded in a fresh state. In general, *Selenicereus* species are reported to be easy to propagate from cuttings and seed.

Analysis: Distinguishing stem joints, stem sections, dried or preserved flowers and parts and derivatives of naturalised and artificially propagated plants of *Selenicereus* from wild plants would be very problematic, although it does not appear that wild populations of *Selenicereus* feature in international trade to any extent, and no species of *Selenicereus* is known to be adversely affected by harvesting for international trade. However, *Selenicereus* stem joints and stem sections resemble those of a number of other cereoid cacti and would be difficult to distinguish from them in trade. This would be likely to create implementation and enforcement problems.

4. *Finished products that are packaged and ready for retail trade (excluding whole or grafted specimens, seeds, bulbs and other propagules) of:* Aloe spp., Aquilaria malaccensis, *Cactaceae,* Cibotium barometz, Cistanche deserticola, Cyclamen *spp.*, Dionaea muscipula, Euphorbia *spp.*, Galanthus *spp.*, *Orchidaceae and* Prunus africana.
The Supporting Statement observes that there are a number of plants in Appendix II covered by current annotations #1, #4 and #8 that feature in the medicinal plant trade. Under the existing annotations, finished products (by implication medicinal products) that are packaged and ready for retail trade of these plants are not exempt from the provisions of the Convention, creating, in theory at least, management and enforcement problems. Proposal 27, which as noted above also deals mainly with Appendix-II medicinal plants and is the outcome of deliberations in the Plants Committee, does not deal with taxa covered by #4 (cacti) at all, but does cover taxa covered by #1 and #8 (orchids). However, while in that proposal the newly proposed annotation for all other medicinal plant taxa that are dealt with (that is those covered by annotations #2, #3, #7 and #10) explicitly or implicitly excludes from the provisions of the Convention finished products packaged for the retail trade, the proposed modifications to #1 and #8 do not do so. Therefore, even if Proposal 27 were accepted, finished products that are packaged and ready for retail trade of medicinal plants in taxa currently covered by annotations #1, #4 and #8 will still be covered by the Convention. The current proposal aims to reduce this inconsistency by introducing the same exemption as that proposed in Proposal 27 to cover medicinal orchids, cacti and a range of plants currently covered by Annotation #1.

Analysis: Medicinal plants covered by #1, #4 and #8 have not been reviewed by the process under the Plants Committee that led to Proposal 27. This latter process reviewed species on a case-by-case basis to ensure that it was desirable in each case to exempt from the Convention finished products packaged and ready for retail trade. The taxa proposed for exemption here have not been subjected to the same scrutiny (although it should be noted that the implicit or explicit exemption of such products was agreed in every case in the review process that led to Proposal 27). In the case of agarwood, this proposal will create its own anomaly, as it applies only to *Aquilaria malaccensis*. Finished products packaged and ready for retail trade of agarwood from other species of *Aquilaria* as well as *Gonostylus* spp and *Gyrinops* will still be covered by the provisions of the Convention. This will create implementation and enforcement problems. The proposal also omits *Dioscorea deltoidea*, a medicinal plant currently covered by Annotation #1.

5. *Non-living herbarium specimens for non-commercial purposes*
Non-living herbarium specimens are likely in many cases to comprise whole specimens of plants, rather than parts. There is provision for exemption for these from CITES controls under Article VII Paragraph 6, which states: “The provisions of Articles III, IV and V shall not apply to the non-commercial loan, donation or exchange between scientists or scientific institutions registered by a Management Authority of their State, of herbarium specimens, other preserved, dried or embedded museum specimens, and live plant material which carry a label issued or approved by a Management Authority”. This provision is rarely if ever used.

Analysis: Aside from the provision in Article VII, there is no scope under the Convention for excluding whole specimens of species listed in the Appendices, so that this proposal is contrary to the provisions of the Convention. It would, in any event, lead to the anomalous situation whereby herbarium specimens of species

currently annotated with #1, #4 and #8 would be exempt from the provisions of the Convention but herbarium specimens of plants covered by other annotations, or no annotation, would not.

Reviewers:
TRAFFIC East/Southern Africa

Amendment of the annotations to various plant taxa to read as follows:

– **For *Adonis vernalis, Guaiacum* spp., *Nardostachys grandiflora, Picrorhiza kurrooa, Podophyllum hexandrum, Rauvolfia serpentina, Taxus chinensis, T. fuana, T. cuspidata, T. sumatrana* and *T. wallichiana*:**

"Designates all parts and derivatives except:

a) seeds and pollen; and

b) finished products packaged and ready for retail trade."

– For *Hydrastis canadensis*:

"Designates underground parts (i.e. roots, rhizomes): whole, parts and powdered."

– For *Panax ginseng* and *P. quinquefolius*:

"Designates whole and sliced roots and parts of roots."

– For *Pterocarpus santalinus*:

"Designates logs, wood-chips, powder and extracts."

– For Orchidaceae spp. in Appendix II and all Appendix-II taxa (*Agave victoriae-reginae, Aloe* spp., *Anacampseros* spp., *Aquilaria* spp., *Avonia* spp., *Beccariophoenix madagascariensis, Bowenia* spp., *Caryocar costaricense, Cibotium barometz, Cistanche deserticola, Cyathea* spp., Cycadaceae spp., *Cyclamen* spp., *Dicksonia* spp., Didiereaceae spp., *Dionaea muscipula, Dioscorea deltoidea, Euphorbia* spp., *Fouquieria columnaris, Galanthus* spp., *Gonystylus* spp., *Gyrinops* spp., *Hedychium philippinense, Lewisia serrata, Neodypsis decaryi, Nepenthes* spp., *Oreomunnea pterocarpa, Orothamnus zeyheri, Pachypodium* spp., *Platymiscium pleiostachyum, Protea odorata, Prunus africana, Sarracenia* spp., *Shortia galacifolia, Sternbergia* spp., *Swietenia humilis, Tillandsia harrisii, T. kammii, T. kautskyi, T. mauryana, T. sprengeliana, T. sucrei, T. xerographica, Welwitschia mirabilis,* Zamiaceae spp.) and Appendix-III taxa *(Gnetum montanum, Magnolia liliifera* var. *obovata, Meconopsis regia, Podocarpus neriifolius, Tetracentron sinense)* annotated with #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

d) fruits and parts and derivatives thereof of artificially propagated plants of the genus *Vanilla*."

Proponent: Switzerland, as Depositary Government, at the request of the Plants Committee

Summary: For plant species in Appendix II, under the terms of the Convention only those parts and derivatives that are specified by annotations to the Appendices are regulated under CITES. A number of different annotations now apply to different plants in Appendix II. The annotations that currently stand are a result of successive modifications to the Appendices and some plants, particularly in higher taxon listings such as that for Orchidaceae, are subject to more than one annotation. It has been recognised for some time that there is some inconsistency in the use of these annotations, that interpreting some of them may be difficult, that some may give rise to enforcement problems, and that some may cover parts and derivatives that need not be regulated under CITES. A review has taken place under the direction of the Plants Committee, specifically dealing with annotations for medicinal plants, to try to solve some of these problems. The present proposal is the outcome of those deliberations. It deals with existing annotations #1, #2, #3, #7, #8 and #10. The rationale for the proposed changes in each case is set out in Table 2 of the supporting statement.

The main impact of the proposal is to harmonise the terms under which various highly processed products of medicinal plants listed in the Appendices are exempted. In the case of all plants currently covered by #2 (a range of species and genera) and #10 (*Taxus* species), and two species covered by #3 (*Nardostachys grandiflora* and *Rauvolfia serpentina*), the proposed new annotation includes all parts and derivatives except seeds and pollen and finished products packaged and ready for retail trade. The remaining plants covered by #3 and *Pterocarpus santalinus*, currently covered by #7, instead have proposed annotations that specify the parts and derivates to be covered by the Appendix-II listing—in these cases all other parts and derivatives are excluded from the listing.

For plants covered by #1 (the majority of plant taxa included in Appendix II) and #8 (the Orchidaceae—the largest taxon included in Appendix II), the proposal simply harmonises the existing wording by combining the two annotations. For these species the proposal has no substantive impact at all.

Analysis: Adoption of this proposal should simplify implementation of the Convention with no adverse impacts on the conservation status of the species affected. As noted in the analysis to Proposal 26, this proposal does not address parts and derivatives of species covered by annotations #1 or #8 that may be traded for pharmaceutical purposes (such as *Cibotium barometz* (#1)*, Dionaea muscipula* (#1) and *Dendrobium nobile* (#8)). For these species finished products packaged and ready for retail trade are still covered by the provisions of the Convention.

Reviewers:

TRAFFIC East/Southern Africa

Deletion of Oconee Bells *Shortia galacifolia* from Appendix II.

Proponent: The United States of America

Summary: *Shortia galacifolia*, or Oconee Bells, is a small groundcover plant, occurring exclusively in shady forests in relatively small, isolated populations in the Appalachian Mountains of the southeastern USA. Similarities to east Asian *Shortia spp.* suggest it is a relic of ancient, pre-glacial forests that once encircled the globe.

Two varieties of the species, *S. galacifolia* var. *galacifolia* and *S. galacifolia* var. *brevistyla,* are separated by approximately 100 km. The species has poor seed dispersal, pollinators are not reported, and specific conditions for seed germination limit regeneration success in the wild. The species has extremely limited distribution and a limited ability to colonise new areas. Hydroelectric construction in Oconee County during the 1960s destroyed the type locality of the taxon, which represented 60% of the habitat for *S. galacifolia* var. *galacifolia* but it is reported that the species is now abundant in most of its few remaining sites.

There is concern that the species is particularly vulnerable to stochastic events, as well as to forest management activities (e.g., timber harvest, road construction), erosion of soil substrate, invasive species, clearing of lands for rural homes, and feral pigs rooting in habitat occupied by the species. However, it is protected by several state and federal laws. The plant is in cultivation in the USA but there is conflicting information on the origin of these plants. According to the supporting statement much of the material in cultivation is sourced from plants originally gathered during dam construction within the range of the species. The supporting statement also maintains that the species is easy to propagate and that plants from cultivated stock are available in the horticultural trade within the USA. Others however maintain that the species is very difficult to propagate artificially and is not currently known to be produced in commercial quantities by the nursery trade. They believe therefore that the majority of plants currently in cultivation in the USA have been collected from the wild.

The CITES Trade Database show no international trade since 1994 but some limited demand reportedly still exists for this species, for example among alpine specialists in the United Kingdom.

The proponent seeks to delete *S. galacifolia* from Appendix II.

Analysis: Although there is evidence of some demand for the species outside the USA, this is likely to be very limited and there has been no evidence of any international trade in the species for at least ten years. Collection for international trade is never known to have had any impact on wild populations of the species and seems unlikely to do so in the future. The species does not therefore appear to meet the criteria for inclusion in Appendix II.

Supporting Statement (SS)	Additional information
	Taxonomy
	Range
USA.	
	IUCN Global Category
	Vulnerable in 1997 IUCN Red List of Threatened Plants *(pre-1994 criteria).* *The species has not been re-evaluated using the revised IUCN Red List categories and criteria.*

Supporting Statement (SS)	Additional information

Biological and trade criteria for retention in Appendix II (Res. Conf. 9.24 (Rev. CoP13) Annex 2a)

A) Trade regulation needed to prevent future inclusion in Appendix I

B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

The species is a narrow endemic occurring in small isolated populations of unknown and widely variable sizes. The species has poor seed dispersal, specific conditions for seed germination and a limited ability to colonise new areas and is in demand by plant enthusiasts. No international trade has been recorded in the CITES Trade Database since 1994. There is said to be no evidence of wild collection of plants, no evidence of illegal trade with habitats and known locations of the species are relatively inaccessible.	*No evidence of US exports in either wild-collected or artificially propagated specimens of this species therefore there is no apparent threat to the species due to international trade (USFWS, 2006).* *In the UK, it is very difficult to keep in cultivation. One nursery contacted receives about 4–5 enquiries per year, which cannot be satisfied. Demand is also said to be sporadic, and prone to changes in fashion (Dunlop, 2007).*

Retention in Appendix II to improve control of other listed species

A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP13) Annex 2a or listed in Appendix I

Does not resemble any other species listed in the Appendices.

Other information

Threats

Sixty percent of the habitat for *S. galacifolia* var. *galacifolia* was destroyed due to hydroelectric dam construction in the 1960s, which led to population and genotype loss. Populations considered vulnerable to stochastic events due to limited distribution and gene pool. Forest management activities such as timber harvest and road construction, clearing of lands, erosion of soil substrate, invasive species and feral pigs are potential threats. Plants salvaged from a hydroelectric dam site are believed to be the original founder stock for much of the horticultural trade. Species is not commercially produced to the extent it once was in the USA but continues to be in demand by plant enthusiasts. However there is no evidence of collection of wild plants. Said to be easily propagated from seeds, stem and root cuttings.	*It is unknown how habitat changes and the loss of associated species, such as* Tsuga canadensis*, in its native habitat will impact* S. galacifolia*. According to McMillan (2007), the species is not mass produced by the nursery trade and is said to be very difficult to propagate, therefore most if not all plants offered are likely to be illegally collected. There are indications of collection from the wild, transportation to a nursery for a year, then trade as a cultivated specimen. Plant enthusiasts are said to have the species in cultivation from wild collected stock.* *The building of lakes and an influx of development has had a permanent effect on the habitat of the species. Ongoing development may further threaten the survival of the species. The loss of gene flow from habitat loss due to hydroelectric construction may have long-term impacts as yet unknown (Clemson University, 2007).* *The species is not known to be available in any garden centres within the USA nor is it exceedingly popular (Kauffman, 2007).*

Conservation, management and legislation

S. galacifolia var. *brevistyla* listed as endangered in North Carolina. No collection on state lands allowed but collection of wild specimens on private land allowed with permit. Species listed on the State's Special Concern List, which allows qualified propagators to artificially propagate the species. *S. galacifolia* var. *galacifolia* listed as endangered in Georgia and North Carolina and as rare in South	*NatureServe, which represents a network of biological inventories, gives* Shortia galacifolia *a Global ranking of Imperilled (G2 – at high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors) (NatureServe, 2006).*

Supporting Statement (SS)	Additional information
Carolina. In Georgia, wild collection on private land is allowed with a state-issued permit required for transport. Species listed on the Regional Forester Sensitive Species list in Region 8 of the US Forest Service, collection only permitted for scientific or educational purposes, or for conservation or propagation. Populations are periodically monitored in Georgia and North Carolina by state agencies. Further study is needed to determine the role of the species in its ecosystem.	
Artificial propagation	
See threats above.	*Listed as available in one nursery in the UK (RHS Horticultural Database, 2006). This nursery receives about 4–5 requests a year for* S. galacifolia*, which it cannot supply. The plant is very difficult to keep in cultivation in the UK and the two specimens at this nursery are not robust enough to be able to propagate via cuttings. It is too cool in the Spring to be able to set seed, and there is insufficient heat to ripen new foliage (Dunlop, 2007).* *It is known to be cultivated in at least 10 botanic garden collections (BGCI, 2007).* *Found to be offered by one nursery in Oregon in the USA. Source of plants not given (Smith, 2007).* *Said to be unavailable in nurseries in South Carolina, USA (McMillan, 2007).*

Reviewers:
S. Oldfield, TRAFFIC North America

Amendment of the annotation to *Euphorbia* spp. included in Appendix II to read as follows:

"Succulent, non pencil-stemmed, non-coralliform, non-candelabriform species only, with shapes and dimensions as indicated, except the species included in Appendix I:

a) pencil-stemmed succulent *Euphorbia* spp.: whole plants with spineless, erect stems of up to 1 cm diameter and a length of more than 25 cm, unbranched or predominantly branching from near the base, leafless or with small leaves;

b) coralliform succulent *Euphorbia* spp.: whole plants with spineless, multiply branched, occasionally sharply pointed stems with a diameter of up to 3 cm and more than 50 cm length, leafless or with unconspicuous or ephemeral leaves; and

c) candelabriform succulent *Euphorbia* spp.: whole plants with angled or winged stems and paired spines, confined to the edges, at least 3 cm diameter and more than 50 cm length, unbranched or branching."

Proponent: Switzerland.

Summary: The genus *Euphorbia* is one of the largest, most widely distributed and most variable genera of plants. There are between 1 500 and 2 000 species, ranging from small annuals to trees, with most species occurring in the tropics. All species have distinct, very reduced flowers, that may be surrounded by colourful leafy bracts, and produce a milky fluid or latex when cut or damaged. This latex can be very caustic. Around 700 species display some degree of succulence, that is are adapted to survive in arid or semi-arid environments through having enhanced water-storage capacity in stems, rootstocks or leaves. Most succulent euphorbias occur in southern and eastern Africa and Madagascar. According to current information, the most species-rich country is South Africa (190 species) followed by Madagascar (99 species), Kenya (71 species) and Somalia (67 species). The conservation status of the vast majority of euphorbias has not been assessed. Some 140 species have been classified as threatened by IUCN, including 81 succulent species from Madagascar.

A wide range of species is of horticultural interest. Some are mass-produced and are widely grown as ornamental garden or house plants. Some of these are traded internationally in large quantities. Others, particularly some dwarf, slow-growing succulent forms, are of interest to specialist collectors. Some of these have been traded as wild collected plants, sometimes in substantial quantities. Some species are also used as medicinal plants.

The entire genus was included in Appendix II of CITES in 1975. In 1997 non-succulent forms were excluded as were artificially propagated cultivars of *Euphorbia trigona*, a taxon only known in cultivation (for discussion of cultivars in the Appendices see Analysis of Proposal 36). At CoP 13 a decision was made to extend the exemption to: artificially propagated specimens of crested, fan-shaped or colour mutants of *Euphorbia lactea*, when grafted on artificially propagated root stock of *Euphorbia neriifolia*, and artificially propagated specimens of cultivars of *Euphorbia* 'Milii' when they are traded in shipments of 100 or more plants, and readily recognisable as artificially propagated specimens. Currently 10 species of succulent *Euphorbia* from Madagascar are included in Appendix I. All are dwarf forms.

The current proposal aims to reduce the workload in implementing the Convention by exempting specimens that the proponent believes do not meet the criteria for inclusion in Appendix II.

Analysis: From the wording of the proposed amendment it is not absolutely clear whether the intent is to exclude from Appendix II any specimens of any species of *Euphorbia* that meets the morphological criteria defining pencil-stemmed, coralliform or candelabriform as given, or merely those specimens that exceed the size limits given in the proposed annotation (i.e. stems longer than 25 cm in the case of pencil-stemmed, and more than 50 cm in the case of the other two groups). However, from the supporting statement, which as noted in Resolution Conf. 4.6 (Rev. CoP 13), should be considered an integral part of the proposal, it is clear that the intent is the latter. However, there is no provision under CITES for excluding whole specimens on the basis of their size, so such a proposal is not in accordance with the Convention.

It is conceivable that the Parties may wish to interpret the proposal in its broader sense – to exclude all

specimens of those species (although this could also be argued as expanding the scope of the proposal, which is not allowed under the Rules of Procedure). Were the Parties to allow such an interpretation the following points would be worth considering:

Interpretation and implementation of such a listing
No indication is provided in the proposed annotation or in the supporting statement explaining how specimens (or species) should be decided as meeting criteria for exclusion, or who should make such a judgement (this is analogous to the situation with the current annotations for Orchidaceae and proposals 34 and 35). Were such judgements to be made on a case by case basis by importing or exporting enforcement agencies, management or scientific authorities there would be a significant risk of inconsistency in interpretation, leading to implementation difficulties. A similar problem existed with the exclusion from Appendix II of non-succulent euphorbias in 1997. This was addressed through the publication of the *CITES Checklist of Succulent Euphorbia Taxa*, which at least allows specimens labelled with their scientific names to be identified as succulent or not. A guide that identified taxa in the three morphological groupings featured in the annotation proposed here would arguably be necessary for implementation of the present proposal. The standard guide to succulent euphorbias identifies five groupings based on gross morphological features, each with a number of sub-groupings, and indicates to which of these each of the species belongs. The three morphological types featured in the current proposal do not appear to map clearly onto these groupings, so that determining which species qualified for exclusion would not be straightforward and would have to be done through a review of each of the 700 or so species currently included in the Checklist.

Criteria for inclusion of species in Appendix II in accordance with Article II, para 2 (a) of the Convention
There is very little information regarding the impact of collection for international trade on wild populations of succulent euphorbias (both within and outside the morphological groupings proposed for exemption). The majority of species within these groupings are unlikely to be in demand for international trade, and many of these are likely to be relatively easy to propagate, from seed and cuttings. However, there are indications that at least two species within these groupings may be threatened by wild-collection for trade. Thus while it is likely that the majority of species proposed for exemption will not meet the criteria for inclusion in Appendix II set out in Annex 2a of Resolution Conf. 9.24 (Rev. CoP 13), this cannot be said with certainty for all the species proposed for exemption.

Criteria for inclusion of species in Appendix II in accordance with Article II, para 2 (b) of the Convention
Species that apparently meet the proposed morphological criteria for exemption occur in, and are recorded in, CITES trade data as exported from range States that are also reported as exporting other succulent euphorbias (both as wild-collected and artificially propagated) and, in the case of Madagascar, that have Appendix-I listed species. Distinguishing small specimens of exempted species from non-exempted species would be likely to be problematic. It would appear therefore that at least some species in the groupings proposed for exemption still meet the criteria for inclusion in Appendix II set out in Annex 2b of Resolution Conf. 9.24 (Rev. CoP 13).

Supporting Statement (SS)	Additional information
Taxonomy	
Over 500 true succulents, divided into five partly artificial groups with a number of sub-groups.	CITES Checklist of Succulent Euphorbia Taxa *(2nd edition) recognises* c*. 700 succulent species and around 200 morphologically distinct infraspecific taxa and hybrids.* *The standard guide to succulent euphorbias (Carter and Eggli, 2003) identifies five groupings based on gross morphological features, each with a number of sub-groupings, and indicates to which of these each of the species belongs. The three morphological types featured in the current proposal do not appear to map clearly onto these groupings.*
Range	
Genus worldwide in temperate and tropical regions; succulent species concentrated in Old World.	*CITES Checklist lists 74 range States for succulent Euphorbias.*

Supporting Statement (SS)	Additional information
IUCN Global Category	
Twenty-three succulent Euphorbias that are classified by IUCN as Endangered are identified at the species level in the CITES Checklist. Eighteen are native to Madagascar and three are included in Appendix I.	*Most of the genus is unassessed.* C*. 140 species have been identified as threatened including* c*. 80 succulent species from Madagascar (IUCN, 2006).*
Biological and trade criteria for retention in Appendix II (Res. Conf. 9.24 (Rev. CoP13) Annex 2a)	
A) Trade regulation needed to prevent future inclusion in Appendix I	
Specimens of Euphorbia species that might be threatened by wild collection are not covered by the proposal.	*At least two species of Euphorbia covered by the morphological classes proposed for exemption are believed threatened by collection for the horticultural trade:* Euphorbia groenewaldii *from South Africa and* E. handiensis *from the Canary Islands (Spain) (Butler, 2007; TRAFFIC East/Southern Africa, 2007).*
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences	
Trade data for Euphorbias for the period 1995–1999 indicate that the bulk of the trade is in a few very common species and predominantly originates from artificial propagation. There seem to be no reports on impact on populations of species that are harvested from the wild for international trade, especially in Madagascar. Furthermore there are apparently no publicly available or accessible non-detriment findings of exporting countries.	*Around 110 000 wild-collected Euphorbia specimens are recorded in trade in the UNEP-WCMC CITES Trade Database in the period 1996–2005. Just over 8 500 were declared only to generic level. Around 120 named species were recorded in trade. More than 90% of the trade was from Madagascar and virtually all the remainder from South Africa. One third was in one species* (E. lophogona) *and fewer than 20 species were recorded in numbers greater than 500 in total.* *Virtually all trade from South Africa has been since 1999. Around 6 000 specimens in around 30 species are recorded as exported; over two-thirds of plants were of one species* E. stellata. *Around 20 million artificially propagated Euphorbias have been recorded in trade in the same period, about half recorded at generic level only. Around 400 species are named in trade. The main taxa recorded were* E. milli (*and varieties), with around 4.4 million,* E. lactea *with 3 million,* E. x lomi *with half a million,* E. abyssinica *with 400 000 and* E. lophogona *with 300 000. The great majority of species were recorded in quantities of 500 or fewer for the whole period. The two most important exporting countries were Thailand and the Dominican Republic, which between them accounted for around 70% of the trade.* *Apart from the two cases above, no information was located on the impact on wild populations of euphorbias of collection for international trade.*
Retention in Appendix II to improve control of other listed species	
A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP13) Annex 2 a or listed in Appendix I	
Ten species are listed in Appendix I, all of which are endemic to Madagascar and all but one were listed in Appendix I with effect on 18 January 1990, and one listed with effect on 16 February 1995.They are all dwarf collector items, traded for horticulture, with underground tubers and mostly succulent leaves.	*Plants in these morphological categories would be difficult for a non-specialist to distinguish from other succulent euphorbias (Butler, 2007).*

Supporting Statement (SS)	Additional information
Succulent *Euphorbia* spp. that are of actual or possible conservation concern, such as the species listed in Appendix I (see Annex 3, English only), or growth forms favoured by collectors and containing dwarf, rare and endemic species, such as globular, tuberculate-stemmed, medusoid, strongly spiny as well as (near) geophytic forms with tuberous roots are not affected by this proposal. All species listed in Appendix I are very clearly outside the scope of this proposal, as they show very different growth forms and are of much smaller size.	

Other information

Threats

Habitat destruction.	

Conservation, management and legislation

Not reviewed.	*Populations of succulent euphorbias are present in many protected areas. Species are in general unlikely to be covered by specific conservation, management and legislation in most countries. In Madagascar, for example, from which most export of wild-collected plants is recorded, no species is covered by domestic legislation (TRAFFIC International, 2003).*

Artificial propagation

A few species of Euphorbia are propagated on an industrial scale. Many others are propagated on a much smaller scale for retail sale to the general public. There is a very limited collectors' market for some species, which is satisfied by a few specialised nurseries.	

Reviewers:
A. Butler, TRAFFIC East/Southern Africa

Inclusion of Pau Brasil *Caesalpinia echinata* in Appendix II.

Proponent: Brazil.

Summary: *Caesalpinia echinata*, commonly known as Pau Brasil or Pernambuco, is a slow-growing leguminous tree, reaching around 12 m in height with a maximum trunk diameter of around 70 cm. It occurs only in Brazil, where it is restricted to the Mata Atlântica (Atlantic Coastal Forest), which now covers less than 100 000 km², under 8% of its original extent. Many aspects of the biology of Pau Brasil and the composition and structure of the plant community in which it occurs are poorly known.

Pau Brasil is classified as Endangered on the IUCN Red List. The species has been heavily traded for over 500 years initially as a source of red dye and more recently as a timber. Since the early 1800s, the heartwood of Pau Brasil has been used for making bows for violins, violas, cellos and basses. Most professional bows today are made from Pau Brasil, which is highly valued for its combination of durability, flexibility and resonance. No comparable substitute material is known and it is seen as an essential material to bow-making, still unsurpassed after several hundred years. Under Brazilian legislation, harvesting and export of the species has been suspended until establishment of scientifically validated technical criteria to guarantee harvest sustainability and conservation of genetic material from these populations (although there is some disagreement regarding the legal status of exports of salvaged wood such as fence-posts). There are reported to be significant stockpiles of Pau Brasil outside Brazil. It is not known how much of the present demand for Pau Brasil is met through use of these stockpiles, and how much through (currently illegal) export of the wood from Brazil. Significant re-planting aims to meet future demand through commercial plantations, although it is reported that plantation-grown wood is considered of inferior quality to wild-sourced wood by bow makers.

The proponent seeks to list Pau Brasil *C. echinata* on CITES Appendix II in accordance with Article II, Paragraph 2a) of the Convention.

Analysis: Pau Brasil is widely agreed to have been heavily depleted by harvest for international trade and has also been affected by habitat loss. It is evidently now scarce in the wild, and known populations are small and scattered. There is ample evidence of continuing high international demand for the species, and indications of illegal trade. While there is little information on the current impact of harvest for international trade it seems likely that any such harvest might further reduce populations to the extent that the species would become eligible for inclusion in Appendix I (if it is not already). The species would therefore appear to meet the criteria for inclusion in Appendix II set out in Resolution Conf. 9.24 (Rev. CoP 13) Annex 2a.

If this proposal were adopted as it currently stands, with all parts and derivatives included, musical instruments and other finished items would become subject to regulation under CITES. If this were deemed not desirable, an annotation designating, for example, logs, sawn wood, veneer sheets and rods would avoid this while still ensuring regulation of the main parts and derivatives in trade.

Supporting Statement (SS)	Additional information
	Taxonomy
	Range
Brazil.	
	IUCN Global Category
	Endangered A1acd (Assessed 1998, Criteria version 2.3).

Supporting Statement (SS)	Additional information

Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP13) Annex 2a)

A) Trade regulation needed to prevent future inclusion in Appendix I
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

Pau Brasil occurs only in Brazil, in Rio de Janeiro and the southernmost part of Bahia, where it is restricted to the Mata Atlântica (Atlantic Coastal Forest), which now covers less than 100,000 km². This is scarcely 7.3% of its original extent.

Projeto Pau brasil run by the Rio de Janeiro Botanic Garden and others mapped the 13 most representative areas where Brazil wood was present in the state of Rio de Janeiro. The total area was 13 250 ha, with individual areas ranging from 72 ha to 5 824 ha.

Recent (2005) surveys in extreme southern Bahia, where the species has recently been discovered, identified 1 754 individual trees on 130 different properties in the cocoa-growing region. Of these, 85 had been planted and the rest were native.

Harvest and trade in *C. echinata* has already led to its total extinction in some parts of its natural range. Continued trade is from a constantly decreasing population.

Significant trade occurs in *C. echinata* for the manufacture of bows. Most violin bow makers are in France, Germany, Italy, the UK, USA, Canada and China. The largest consumers of Pernambuco wood are the USA and Europe. Germany and France are thought to have reserves of the wood.

Research indicates values in the order of 200 m³ to supply national and international markets. The actual figure is likely to be much higher to take into account the amount of wastage during processing (70–90% of the wood is wasted in transforming logs to bows).

Illegal trade is known to occur to produce violin bows and for other purposes, traders declare another species instead of Pau Brasil.

No comparable substitute to Pernambuco is known. Therefore trade will continue (International Pernambuco Conservation Initiative, IPCI, no date).

It is said that plantation timber will never replace wild harvested material since bow makers firmly believe the former to be of inferior quality (Sampaio Pereira, 2007).

*Studies are underway to determine the population structure of remaining populations. Of five sub-populations studied in the Cabo Frio Centre of Plant Diversity in Rio de Janeiro State, one showed a high proportion (48%) of adults in the population. The remainder comprised almost entirely plantlets or young plants (*Sampaio Pereira, *2007).*

The slow-growing nature of the species means that suitable heartwood is only produced after 30 years (IPIC, no date).

Though there is little detailed information on levels of trade, no certified operation in Brazil is harvesting this species, since timber production is forbidden in the Atlantic Rainforest in Brazil (de Almeida Voivodic, 2007).

In 1997 it was reported that a number of bow makers (generally the larger companies) and some wood traders have large stocks of C. echinata*, believed to result at least in part from illegal harvest. These may have been created as insurance against any future ban on trade or as an attempt to control the market (Fauna and Flora International, 1997). These stockpiles were still believed to exist in 2007 (Herrod, 2007).*

Inclusion in Appendix II to improve control of other listed species

A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP13) Annex 2a or listed in Appendix I

C. echinata has no similar species listed on CITES.

Supporting Statement (SS)	Additional information

Other Information

Threats

Habitat loss has led to a greatly reduced and fragmented range, and continued deforestation for urban development, agriculture, timber harvesting and tourist development (associated with an increasing human population) is likely to further reduce habitat.	*Less than 10% of the Mata Atlântica remains (Conservation International, 2007).*
The genetic diversity of the species is decreasing due to the constant fragmentation and reduction of remaining forest areas.	*It is difficult to establish new protected areas (Fauna and Flora International, 1997).*
Illegal logging of trees, high levels of wastage of timber and the reluctance of timber traders to buy cultivated *C. echinata* are additional pressures on the species.	*A report to the German Bundesamt für Naturschutz (Anon, 2002) stated that most of the* C. echinata *currently used to make violin and other bows was cut illegally.*

Conservation, management and legislation

A draft law aims to protect the Mata Atlântica biome. Many protected areas are already designated within the Mata Atlântica. Of the 13 areas in Rio de Janeiro State considered to have the most representation of Pau Brasil, ten are enclosed within legally protected conservation units.	*Extent of enforcement of national legislation is unknown, but is said to be weak in the Atlantic Rainforest region of Brazil (de Almeida Voivodic, 2007).*
In addition there are at least 28 Private Natural Heritage Reserves (RPPN) exist in the Mata Atlântica. Landowners guarantee protection of the animals and plants in these reserves in exchange for tax reductions. It is likely that *C. echinata* are protected in some of these areas although exact numbers are unknown.	*Forest fragments with Pernambuco populations are scarce and knowledge is fragmented, making it difficult to establish effective conservation strategies. A detailed study of the 13 remnant populations in Rio de Janeiro State (one of the most important for the species) established that there is wide variation in protection for the forest fragments, and in local knowledge about the species (JBRJ, 2006).*
A series of specific legal instruments protect *C. echinata* along with more general measures governing the harvest and transport of native Brazilian flora, which include:	*According to IBAMA (Anon., 2007), as the required technical criteria under CONAMA Resolution No. 317/2002 have yet to be scientifically established, all harvest and export of this species is currently unauthorised. Sampaio Pereira (2007) states that this covers 'dead' wood from fence posts etc, and that the assertion in the SS that IBAMA allows trade in material from property improvements is incorrect.*
Decree No 750, which forbids harvesting in Mata Atlântica; and,	
CONAMA Resolution No 278/2001 empowers IBAMA to suspend authorisations on harvesting.	*TRAFFIC South America (2007) notes that details of trade agreements enabling fence posts etc to be salvaged appear contradictory, and raises concerns that such agreements (should they exist) might be a way of laundering illegally harvested timber.*
CONAMA Resolution No. 317/2002 sets the necessary criteria for conservation of genetic material and sustainability of the harvest of Mata Atlântica plant species threatened with extinction to be included in State Plans for Conservation and Use, which must be based on technical, scientific studies.	*A Rio Tinto Brasil-funded Pau Brasil mapping initiative was developed and undertaken in 2002 by the Rio de Janiero Botanic Garden Research Institute alongside Fauna and Flora International and other partners, with the aim of strengthening conservation action for Pau Brasil in Rio de Janeiro State (JBRJ, 2006).*
Brazil has a programme to fight illegal harvest but existing legislation must be enforced and staff need capacity-building in timber identification.	
The species is not covered under any international agreement subscribed by to Brazil.	*The bow makers' Pernambuco conservation initiative (COMURNAT) has an action plan for conservation of the species including cultivation, education and fundraising (COMURNAT, 2007).*
Action to promote planting aims to meet future demand through commercial plantations, and to conserve the variability of the remaining genetic base. It also fosters enlargement and creation of protected areas and re-introduction in regions where the species had become extinct.	*A 1997 report (Fauna and Flora International, 1997) noted that protected areas in the region suffered a lack of structural, human and financial resources, which greatly reduced their effectiveness. There was little coordination of conservation programmes between reserves and states, many of which lacked management plans. Despite legal protection, in most places the clearance of the Atlantic Forest and the cutting of* C.
Currently harvest of this or any species from the Mata Atlântica is prohibited. The only legal trade in this species is in material from property improvements	

Supporting Statement (SS)	Additional information
(fences, sheds, houses) as long as a license has been issued by IBAMA. Suspension on harvest is to remain in force until the establishment of scientifically validated technical criteria to guarantee sustainability of the harvest and conservation of genetic material from these populations.	echinata *were poorly policed, and illegal logging continued (Fauna and Flora International, 1997).*
Artificial propagation	
Propagation may be necessary to ensure species survival but little information on the success or failure of propagation efforts or forestry experiments is available. Technical knowledge and species management knowledge is therefore limited. Several partnerships exist, planting Pau Brasil seedlings in privately owned areas for future commercial exploitation. Enrichment planting seems feasible. Considerable planting of seedlings for conservation and commercial cultivation is reported. Quality of *C. echinata* grown in plantations is claimed to be inferior and timber traders favour wild-grown wood.	
Other comments	
No subspecies or variety has been officially recognised to date but at least three morphological patterns are distinguishable throughout its range.	*The term 'Brazilwood' has also been used in trade to describe second quality timber that is not* Caesalpinia echinata*, but probably Massaranduba (*Manilkara *spp.) (Cumine, 2007).*

Reviewers:
M. de Almeida Voivodic, T. Cumine, C. Herrod, T. Sampaio Pereira, TRAFFIC South America.

Inclusion of the rosewoods *Dalbergia retusa* and *D. granadillo* in Appendix II.

Proponent: Germany, on behalf of the European Community Member States, acting in the interest of the European Community.

Summary: *Dalbergia retusa* (Black Rosewood, Nicaraguan Rosewood) is a slow-growing hardwood leguminous tree, which occurs in the tropical dry forests of Central America, from Mexico to Panama and probably north-western Colombia, primarily in Costa Rica, Nicaragua and Panama. The tree has been specifically and extensively felled to harvest the dense and highly prized heartwood, said to be the heaviest and darkest of the Rosewood family. *D. granadillo* is traded as a substitute for *D. retusa* and is found in Mexico and El Salvador.

D. retusa reaches a height of around 20 m and a stem diameter of some 40 cm. It first flowers when around 4–5 years of age and appears to be self-incompatible (that is, it requires pollination from another individual to set viable seed). Natural regeneration has been said to be scarce; however, as with many other *Dalbergia* species, *D. retusa* apparently responds well to fire, with saplings and juveniles reportedly numerous in areas periodically exposed to fire.

Both *Dalbergia retusa* and *D. granadillo* are traded as Cocobolo primarily for guitars and other instruments and also for fine furniture, brush backs, cutlery handles, gun grips, pen blanks and carvings. Historically, the wood was used to make floors, tiles and beams but, because of decreasing availability, use has generally been reduced to smaller items. Wood from *D. retusa* commands high prices, retailing in the USA at US$15–25 per board foot, compared with US$5–10 for other tropical hardwoods, indicating its scarcity and desirability. *D. granadillo* wood is less sought-after and cheaper. There is very little information on the volume of international trade although Cocobolo wood is available from numerous sources online. Locally, the wood is used to produce carvings for the tourist trade in the Darién region of Panama. There is no information on volumes used. The source of timber for international trade at present is unclear; some suppliers state that timber comes from private lands; others that timber is salvaged from dam sites and trees felled during hurricanes. The species has been the subject of plantation trials in Costa Rica and Nicaragua but there are not known to be any commercial plantations of the species.

There is little detailed information on the current status of the species in the wild although accessible stocks of timber of *D. retusa* are said to have been largely exhausted, particularly in Costa Rica, where it is said to be almost extinct. Its tropical dry forest habitat has been severely reduced in extent (e.g. by over 60% in Costa Rica) through conversion for cattle-ranching, agriculture and other uses, and such conversion continues. It has been described as threatened in Costa Rica (although is not included in the national red list) and endangered in Panama, where it was apparently once plentiful, and Guatemala. Populations of reasonable size were said in 1998 to remain in Mexico and it was described as frequent in Nicaragua in 2001. Participants at a workshop on internationally traded tree species in Mesoamerica held in 2005 considered the species to be endangered in Mexico and in a critical state in Nicaragua (although with a lack of concrete data). *D. retusa* was assessed by IUCN as Vulnerable (A1acd) in 1998; *D. granadillo* is not currently listed in the IUCN Red List of Threatened Species.

The proponent seeks to list *D. retusa* on CITES Appendix II in accordance with Article II, paragraph 2 a) of the Convention and Resolution Conf.9.24 (Rev. CoP 13) Annex 2a) Paragraph B.

D. granadillo is proposed for listing in Appendix II for look-alike reasons in accordance with Article II, paragraph 2 b) of the Convention and Resolution Conf.9.24 (Rev. CoP 13) Annex 2b) Paragraph A.

Analysis: Although information on *Dalbergia retusa* in the wild and on any population trends is scanty, the species does appear to be scarce, and is widely agreed to have been heavily depleted by harvest for international trade. There is evidence of continuing high international demand for the species, although very little information on volumes in trade. Harvest for international trade may be expected to have a continuing adverse effect. However, as the species can reportedly reproduce at a relatively young age, which is likely to be before it becomes large enough to be harvested for its timber, it is not certain if the impact of harvesting for international trade is enough to risk the species becoming eligible for inclusion in Appendix I, or to reduce the wild population to a level at which its survival might be threatened by continued harvesting or other influences.

If *Dalbergia retusa* were considered to meet the criteria for inclusion in Appendix II, implementation of such a listing would be greatly facilitated by the inclusion of *D. granadillo*, which resembles it and which is traded under the same name.

Supporting Statement (SS)	Additional information
Taxonomy	
Taxonomic categorisation of the genus is difficult and estimates of the total number of species vary between 100 and 200.	*250* Dalbergia *species have been estimated (Lewis* et al.*, 2005).*
Range	
Dalbergia retusa Central America from Mexico to Panama; also reported in north-west Colombia. ***D. granadillo***: El Salvador and Mexico.	D. retusa: *Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama (UNEP-WCMC Species Database, 2007).*
IUCN Global Category	
	D. retusa: *Vulnerable A1acd (Assessed 1998, Criteria ver. 2.3).* D. granadillo *has not been assessed.*

Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP13) Annex 2a)

A) Trade regulation needed to prevent future inclusion in Appendix I
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

Dalbergia retusa and D. granadillo are heavily exploited and in international trade, with high prices on the international market promoting the exploitation of the species. In 1979 *D. retusa* was described as scarce, and has since declined even further, all accessible stands of the genus having long since been logged out.

D. retusa has a highly fragmented distribution from Mexico to Panama. Reported from north western Columbia. In Costa Rica though available, habitat has been reduced by 61.5%. Occurs rarely in Panama.

There is little information available on current abundance but reported difficulties in sourcing the wood suggest it may already be extinct in some wild areas. It is likely that many populations are of a lower density than they would be in the absence of logging and that mature trees will have been preferentially felled.

The species has been suggested as a substitute for *D. nigra* (Brazilian Rosewood), which was listed in CITES Appendix I in 1992, for guitar manufacture, so trade demand is likely to increase.

Flowers of *D. retusa* are self-incompatible and dependent on pollination by bees therefore a minimum population density for regeneration of the species is required and this is at risk from excessive logging.

D. retusa *Participants at a 2005 workshop on timber tree species subject to international trade (Gillett and Ferriss, 2005) considered* D. retusa *to be in a critical state in Nicaragua (although it was unclear how much information was available) and endangered in Panama. The species was not included in national red lists in Costa Rica or Mexico, although Estrada* et al. *(2005) classified the species as Endangered in Costa Rica and Ramirez (2007) considers it also to be endangered in Mexico (Ramirez, 2007). It has been classified as Endangered in the recently published* Red List of Trees in Guatemala *(Vivero* et al*., 2006).*

In Costa Rica D. retusa *is restricted to the Pacific coast of the country, and is not found in the northern zone of Los Chiles, as suggested in the proposal (Zamora, 2007).*

D. retusa *is used particularly in making parts of clarinets e.g. bells and barrels, and parts of violins e.g. turning pegs, chin rests and tail pieces. Also used to make small harps, guitars and recorders (Cumine, 2007). Also used for fine furniture, brush backs, cutlery handles, gun grips, pen blanks and carvings.*

It is said to be necessary to reduce actual exploitation rate and provide time for natural populations to recover. Trees of all sizes are felled indiscriminately, with associated effects on the regeneration of natural populations (Zamora, 2007).

Guatemala indicated its use for craft-making, but no indication was given on whether this was legal or not. However, there are no data on trade of this species. Experts in the workshop indicated a lack of available information on illegal trade, with the exception of Mexico and Panama who stated no illegal trade in these countries existed. Nevertheless the species is currently advertised by at least one dealer as obtainable in Guatemala (Reuter, 2007).

Supporting Statement (SS)	Additional information
	Websites indicate retail prices within the USA of US$15–25 per board-foot (US$5–10 for other tropical hardwoods) (eg.www.cocobolo.net, www.cocoboloking.com). Cocobolo guitar units (four pieces for construction of a guitar) sell for approximately US$200. Finished guitars made with cocobolo sell for up to thousands of US dollars. Dealers spoken to were unaware of the source of their D. retusa*. It was noted that end consumers were less concerned with sustainability and more with price.* ***D. granadillo*** *Classified in Mexico as 'P' on NOM 059 ECOL 2001, 'in danger of extinction and non endemic' (Ramirez, 2007).*

Inclusion in Appendix II to improve control of other listed species

A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP13) Annex 2a or listed in Appendix I

D. granadillo is proposed for inclusion for look-a-like reasons. The timber of the two cannot be distinguished and both are traded as Cocobolo.	

Other information

Threats

An increase in tourism in range States has led to an increase in demand for carvings made from these *Dalbergia* species. Ongoing demand for the wood for making musical instruments combined with high levels of wastage place further pressure on the species. The felling of mature individuals threatens the capacity of the species to regenerate. The rate and extent of deforestation in the range States is very high, and conversion of habitat to agriculture and cattle ranching means that habitat that should be available to species has been destroyed or heavily exploited. *D. retusa* is used for making woodwind instruments such as professional quality clarinets. Although most professional quality clarinets are made of African Blackwood (*D. melanoxylon*), *D. retusa* is said to produce a softer tone. Due to the stresses placed on woodwind instruments, a professional instrument has a lifespan of approximately six years. This means that even with a consistent number of players, there is a steady demand for the wood.	*Exploitation of* D. retusa *as a timber is intense and areas where the species was formerly widespread are almost completely exhausted; this is most notable in Costa Rica. The habitat has been exploited for 400 years and continuing reductions are caused through cattle ranching and burning (Americas Regional Workshop, 1998).* *There is an immense lack of information about the remaining genetic resources of* D. retusa *populations (Zamora, 2007).* *Illegal logging in general is currently known to occur in a few localities of Soconusco region (in the Pacific border between Mexico and Guatemala) (Ramirez, 2007).*

Conservation, management and legislation

Large-scale dry forest restoration studies have been undertaken in Guanacaste, Costa Rica, with the goal of re-establishing 70 000 ha of dry forest and associated habitats. The species has been investigated for reforestation in Panama. Populations are contained within protected areas in Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua. However, no population monitoring reports have been published for this species in any of the range states and neither species is protected under any international legal instruments.	*Two FSC certified operations in Costa Rica include* D. retusa *as species considered (Reuter, 2007).* *In Guatemala the National Council for Protected Areas (CONAP) lists* D. retusa *as Category 2 specifying that use must be controlled through a management plan and an Environmental Impact Study is required. In Guatemala there are no reliable reports of the species or its uses (Vivero* et al., *2006). Neither* D. retusa *nor* D. granadillo *have been approved for cutting in Protected Areas where Consejo Nacional de Areas Protegidas (CONAP) rules apply (only* D. nigra *has a licence to be cut) (Arreaga, 2007).*

Supporting Statement (SS)	Additional information
D. retusa is poorly protected, with few range States including special legislation on the species. Trade in species is neither monitored nor regulated. Less than 0.1% of dry tropical forest of Pacific Mesoamerica, the most important ecosystem for *D.retusa,* has conservation status.	*Mexico has not given any harvest authorisation for* D. retusa *or* D. granadillo *in the past six years (Reuter, 2007).* D. retusa *IS used in some reforestation projects attempting to focus on native species restoration and reforestation (Donovan, 2007).*
Artificial propagation	
Some plantations of the species exist and more are planned in an attempt to fulfil demand for the timber. FSC lists two organisations that maintain *D. retusa* in plantations in Costa Rica and in Nicaragua. One supplier states that most of the Cocobolo available today is from privately owned *fincas* with trees planted 80–100 years ago. Though slow growing, the value of the timber could compensate for relatively low annual increments in volume. Panamanian Indians, for example, are planting seedlings locally for future use.	*In Costa Rica some certified projects (Buen Precio S.A y Barca S.A.) have made experimental plantings of* D. retusa *in small areas (0,25–1,0 ha). No harvest has yet taken place (Alvarez, 2007). A protocol for* in vitro *propagation of* D. retusa *has been successfully developed in Costa Rica (Ramirez, 2007).* *In Guatemala,* D. retusa *has been approved as a subsidised species for planting in private areas under the PINFOR programme (Programa de Incentivos Forestales) under control of the Instituto Nacional de Bosques (INAB). Up to 2004, 46.54 hectares of* D. retusa *had been planted in private lands in Guatemala under PINFOR (Arreaga, 2007).* *In Nicaragua, one plantation which includes* D. retusa *is under FSC certificate (Travisany, 2007).* *No cultivation in Mexico (Ramirez, 2007).*
Other comments	
	D. retusa *(from FSC sources) is recommended as an alternative to the CITES Appendix I listed* D. nigra *by the Mesoamerican and Caribbean Forest and Trade Network (Reuter, 2007).* *Cocobolo has widely-known allergenic properties of concern to users of the wood who are dealing with the dust. It is a regular source of contact dermatitis (Cumine, 2007).*

Reviewers:
H. Alvarez, W. Arreaga, T, Cumine, C. Herrod, J. L. Vivero, N. Zamora.

Inclusion of Honduras Rosewood *Dalbergia stevensonii* in Appendix II.

Proponent: Germany, on behalf of the European Community Member States, acting in the interest of the European Community.

Summary: *Dalbergia stevensonii,* commonly known as Honduras Rosewood, is a medium-sized leguminous tree, reaching up to 30 m in height and with a maximum trunk diameter of around one metre. It produces a timber that is hard, heavy, durable and resonant and is highly valued in international trade for use in musical instrument manufacture (particularly bars for marimbas and xylophones), as well as, to a lesser extent, fine furniture, cutlery handles and brush backs. The species is restricted to the broadleaf evergreen swamp forests of southern Belize and neighbouring regions of Guatemala and Mexico, where it occurs in a limited area. Little information is available on population status or trends, although in 1984 it was said to occur in fairly large patches within its habitat, and has been reported as a dominant component of the forest types in Belize in which it occurs. These forests, previously relatively inaccessible, are coming under increasing pressure, notably from colonists practising slash-and-burn agriculture and are undoubtedly decreasing in extent. Overall, forest cover in Belize was estimated in 2000 as having declined at an estimated rate of 2.3% (some 36 000 ha) per year. The breeding system of *D. stevensonii* is poorly known; other *Dalbergia* species are outbreeding (require more than one individual for successful pollination) and often show high levels of seed abortion, suggesting that a minimum population density is required for regeneration.

Felling of live, naturally occurring trees of *D. stevensonii* is prohibited in Belize and commercial exploitation of the species in Guatemala is subject to strict regulation. Much of the range of the species in Belize is within protected areas, but enforcement is said to be weak and illegal felling and cross-border trade in this species are reportedly a problem in some areas. Illegal logging in general is reported from Guatemala and Mexico although no information is available on the impact of such logging on *D. stevensonii*.

There is relatively little recent information on the extent of international trade. Guatemala reported the export of just over 250 m^3 of Honduras Rosewood in 2004, valued at US$380 000, to a range of countries including Japan, USA, Germany and the Netherlands. Overall, Honduras Rosewood timber does not appear to be readily available internationally. Several companies that do offer the species on the international market report its origin as Belize where, as noted above, logging of the species is illegal. There is reportedly some local use in Belize. Information is lacking for the other two range States.

The species is not believed to be grown commercially in plantations, although it has been used in at least one tree-planting scheme in Belize. There are currently no known internationally certified sources of supply of Honduras Rosewood.

The proponent seeks to include *D. stevensonii* in CITES Appendix II in accordance with Article II, paragraph 2 a) of the Convention and Resolution Conf. 9.24 (Rev. CoP 13) Annex 2a) Paragraph B.

Analysis: Very little information is available to determine current population size or trends for *D. stevensonii* although there appears to be ongoing loss of habitat due to agricultural conversion. There is a lack of information on the extent or impacts of trade in this species and while trade does seem to occur (including illegally) this species does not appear to be available internationally in large quantities. Overall, there is insufficient information to determine with certainty whether *D. stevensonii* meets the criteria for inclusion in Appendix II.

Supporting Statement (SS)	Additional information
Taxonomy	
Range	
Southern Belize and neighbouring regions of Guatemala and Mexico.	
IUCN Global Category	
	Not currently included in the IUCN Red List of Threatened Species.

Supporting Statement (SS)	Additional information

Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP13) Annex 2a)

A. It is known, or can be inferred or projected, that the regulation of trade in the species is necessary to avoid it becoming eligible for inclusion in Appendix I in the near future; or
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

There is limited availability of *D. stevensonii* in trade but it is very much sought after and unavailable from plantations.

According to Gillett and Ferriss (2005), no trade data are available for Belize, but strong international demand for the species exists. A company associated with Fauna & Flora International is proposing plantation trials.

Information on population size is lacking. In 1979 it was described as 'scarce'; all accessible stands of the genus have long since been logged out. Indications are that populations are declining and increased accessibility to habitat via road building and agriculture may lead to growing pressure on the species.

According to the "Strategies for the Sustainable Use and Management of Timber Tree Species subject to International Trade: Mesoamerica" workshop presentation for Belize there is no recorded trade since the species is no longer subject to production in commercial quantities. Any export tonnage would be expected to be very small.

D. stevensonii has a restricted distribution. *D. stevensonii* is mainly found alongside rivers. In 1927, Stevenson reported that the forests of **Belize** covered 87% of the total area. In 2000, forest was reported to cover only 59.1% of the land area of the country. Deforestation is continuing, with the annual rate of change of forest cover 1999–2000 reported to be 2.3% (representing 36 000 ha; FAO, 2005). In 2000 in **Guatemala**, forest was reported to cover 26.3 % of the land area of the country. The annual rate of change of forest cover 1999–2000 was reported to be 1.7% (representing 54 000 ha; FAO, 2005). Forests represented 28.9% of the land area in 2000 in **Mexico**. The annual rate of change of forest cover 1999–2000 was reported to be 1.1% (representing 631 000 ha; FAO, 2005).

In 2004, 254 m^3 of lumber was recorded as exported from Guatemala to various countries including the Netherlands. This was reported to originate from authorised operations outside protected areas (Reuter, 2007). It was valued at US$380 000. Using a conversion rate of 180 board feet per m^3 (Richards et al., *2003) equals approx US$8.4 per board foot).*

The Environmental Ministry Delegation in the State of Campeche in Mexico reported that no requests for the use of this species had been received since 2004, and consequently no permits have been granted (Reuter, 2007).

In spite of felling restrictions in the country, several international suppliers give the source of the wood [of *D. stevensonii*] as originating in Belize; others fail to supply country of origin information or give the vague description of 'Central America'.

One trader stated that he could not get hold of the timber, despite high demand for it and repeated attempts (Herrod, 2007). The species is currently advertised by at least one dealer as obtainable in Guatemala (Reuter, 2007).

Habitat specificity and restricted distribution means habitat availability is a limiting factor for the species, no population monitoring reports have been established and information on the breeding system and population structures of the species are unknown.

The species is not listed on the Mexican Red List of Threatened Species (NOM 059 ECOL 2001).

Inclusion in Appendix II to improve control of other listed species

A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP13) Annex 2 a or listed in Appendix I

D. stevensonii resembles *D.nigra* (listed in Appendix I in 1992), and has been recommended as an acceptable, even superior, substitute in the manufacture of guitars. Therefore pressure on the species will increase. Growing scarcity of other *Dalbergia* species may lead to increasing pressure on *D. stevensonii*.

D. nigra *is endemic to Brazil.*

Supporting Statement (SS)	Additional Information

Other Information

Threats

Habitat loss due to extensive deforestation, poor agricultural practice, pollution, road construction and urbanisation is a major threat to the species. This is projected to increase alongside a growing human population that is mainly poor.

There is high demand in trade for the precious wood, high levels of wastage of timber in trade and reports of illegal trade.

The species is threatened by genetic erosion.

This species is the preferred choice and therefore in high demand for the production of bars for marimbas and xylophones. It is said that no other timber alternatives can produce the same tonal quality (Cumine, 2007).

Conservation, management and legislation

Felling of live, natural trees is now prohibited in **Belize** Additionally, a licence is required to cut or otherwise injure any tree within forest reserves, national land and private land to which the Act has been applied. The success of national legislation to protect the species has not been evaluated. The Government of Belize has very little money with which to manage protected areas or enforce environmental regulations.

In Belize, the species occurs in protected land areas and forest reserves. However, forest reserves are created for wood exploitation rather than habitat conservation. Illegal logging has also been reported from nature reserves.

Mexico banned logging in 1989, which extended to rural uses such as fuel wood collection. This resulted in a number of clashes between the authorities and the indigenous communities in the Chiapas highlands and other areas.

D. stevensonii is listed in Category 3 of CONAP-Consejo Nacional de Áreas Protegidas in **Guatemala** to prevent the species from becoming in danger of extinction. Commercial exploitation of the species is subject to strict regulation.

D. stevensonii has no protection under any international legal instruments.

In the Toledo district of Belize, a training programme is being provided for indigenous communities to develop sustainable forestry management and a tree nursery is being developed for D. stevensonii *and other species (Global Trees Campaign, no date).*

In ***Guatemala*** D. stevensonii *has been given a National category EN A2cd; B2ab (ii, iii) and a CONAP category of 2.*

The Guatemalan laws that regulate the use of timber and forests are:

Ley Forestal (Decreto 101-96)

This law from 1989 declares that biodiversity is part of the Guatemalan natural patrimony and thus its conservation through adequately declared and managed protected areas is of national interest. The institution responsible for the implementation of this law is the National Protected Areas Council (CONAP). As per forestry related issues, its coverage is limited to forests within Protected Areas.

Ley de Áreas Protegidas (Decreto 4-89 y sus reformas: 18-89; 110-96; 117-97).

This law from 1996 created the National Forests Institute (INAB). With this law it was declared as a national priority and of social interest the reforestation and conservation of forests through forest development and its sustainable management. This law covers all national territory and forested areas as well as those with forest exploitation potential, except Protected Areas. Licences will be authorised based on an approved Management Plans, and the INAB will also oversee customs and saw mill operations so as to quantify, qualify and verify the legal origin of forest products. Export of round or worked timber, and sawing wood is prohibited if it exceeds 11 cm in thickness, with no regard to its length or width with a few exceptions listed in Art. 65 of this law.

However, there is no approval to cut D. stevensonii *in protected areas and up until 2004 no* D. stevensonii *had been planted under INAB regulations (Arreaga, 2007).*

There is not thought to be any sustainably produced timber to FSC standards for this species (Reuter, 2007).

A full assessment of the species in the wild is urgently needed (Vivero et al.*, 2006).*

Supporting Statement (SS)	Additional Information
	As part of the Global Trees Campaign, FFI through its partner in Belize, The Ya'axche Conservation Trust, is working with the Government of Belize Forest Department to survey private and nationally owned forests in Southern Belize for D. stevensonii *and other valuable timber species (Magin, 2007).*
Artificial propagation	
Species does not appear to be widely grown in plantations.	*In Guatemala,* D. stevensonii *has been approved as a subsidised species for planting in private areas under the PINFOR programme (Programa de Incentivos Forestales). Up to 2004, zero hectares of* D. stevensonii *had been planted (Arreaga, 2007).*
Other comments	
International trade has promoted cutting of species but there are no international measures to control movement of specimens across international borders.	*Since there are a large number of scientific synonyms and common names for* D. stevensonii*, it has been suggested that listing would enhance taxonomic clarity (IISD, 2006).*
Species can be confused with *D.tilarana.*	*Currently xylophones sold as 'Rosewood' could also be of* D. latifolia*, although they are usually visually quite distinct (Cumine, 2007).*

Reviewers:
W. Arreaga, T. Cumine, G. Magin, S. Oldfield, J. L. Vivero.

Inclusion of *Cedrela* spp. in Appendix II.

Proponent: Germany, on behalf of the European Community Member States acting in the interest of the European Community.

Summary: *Cedrela* is a genus of trees which, as currently defined, is restricted to the New World and comprises at least seven species that occur naturally from Mexico and the Caribbean islands south to Argentina. The most widespread species, *C. odorata* has been planted widely in many parts of the region and has been introduced to many countries elsewhere. Once a common tree, it has had a long history of over-exploitation for its timber and now suffers from extensive loss of habitat. Populations are now much reduced in many countries in its native range and it is categorised in the IUCN Red List of Threatened Species as globally Vulnerable. The wood is used extensively in many countries for furniture making and other purposes and large quantities have recently been exported by several South American countries. In many countries there are laws and regulations addressing control of logging and trade in the species but lack of human and financial resources diminishes their effectiveness, and some illegal trade has been reported. Other species in the genus, particularly *C. fissilis* and *C. lilloi*, are also apparently subject to over-exploitation. Both *C. fissilis* and *C. lilloi* are currently classified by IUCN as Endangered.

Cedrela odorata has been listed in CITES Appendix III by Colombia and Peru since 2001. The other species in the genus are proposed for inclusion in Appendix II on a look-alike basis.

The proponent seeks to include *C. odorata* in Appendix II in accordance with Resolution Conf. 9.24 (Rev. CoP 13) Annex 2a, paragraph B, and all other species in the genus in Appendix II in accordance with Resolution Conf. 9.24 (Rev. CoP 13) Annex 2b, paragraph A.

Analysis: *Cedrela* is a genus of New World trees most of which have extensive ranges. The most widespread species, *C. odorata*, and at least some of the other species, have been intensively exploited for their timber, for both domestic use and international trade. Some populations are known to have been substantially reduced by the combined effects of selective logging and habitat destruction. However, detailed information on logging rates and population trends is lacking for many areas. In the absence of such information it is not possible to say with certainty whether any species in the genus meets the criteria for inclusion in Appendix II set out in Resolution Conf. 9.24 (Rev. CoP 13) Annex 2a.

Cedrela species and their products in trade resemble each other. Listing of some species in the Appendices and not others would be likely to create enforcement problems.

Supporting Statement (SS)	Additional information
Taxonomy	
The following accepted species are listed based on Styles (1981): *Cedrela fissilis* *Cedrela lilloi* *Cedrela montana* *Cedrela oaxacensis* *Cedrela odorata* *Cedrela salvadorensis* *Cedrela tonduzii.*	*The proposal follows the latest published taxonomic revision but a new revision is currently in progress.* *Zapater* et al. *(2004) described a new species from Argentina:* C. saltensis, *and they accepted* C. balansae *as valid.* *The International Plant Names Index [IPNI] (2007) lists 35 New World species names that are presumably synonyms of the accepted species but are not mentioned in the SS.*
Range	
C. odorata: Antigua & Barbuda, Argentina, Bahamas, Barbados, Belize, Bermuda, Bolivia, Brazil, Cayman Islands, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, French Guiana, Grenada, Guadeloupe, Guatemala, Guyana, Haiti, Honduras, Jamaica, Martinique, Mexico, Montserrat, Netherlands Antilles (Curaçao), Nicaragua, Panama, Paraguay, Peru, Puerto Rico, St Kitts & Nevis, St Lucia, Suriname, Trinidad & Tobago, Venezuela. It has also been introduced to many other countries.	**C. odorata** *has also been recorded from St Vincent (Jackson, 2004).*

Supporting Statement (SS)	Additional information
C. fissilis: Costa Rica to Brazil and Argentina.	**C. fissilis** *has also been recorded from Bolivia, Colombia, Ecuador, Panama, Paraguay, Peru and Venezuela (IUCN Red List), also El Salvador (Anon., 1997), Guyana (Steege* et al., *2000) and Honduras (Anon., 1999).*
C. lilloi: Argentina, Bolivia, Brazil, Peru.	**C. lilloi** *has also been recorded in Ecuador (Jørgensen and León-Yánez, 1999) and Paraguay (IUCN Red List).*
C. montana: 'it occurs in the same areas as *C. lilloi*, with which it is associated in the highlands of Venezuela and Peru'.	**C. montana** *has been recorded from Colombia (Sears and Marin, 2001), Ecuador (Bussmann, 2005), as well as Peru and Venezuela (but not in Argentina [Zapater* et al., *2004] or, apparently, Bolivia and Brazil).*
C. oaxacensis: Mexico.	**C. oaxacensis** *is listed for Guatemala by Anon. (undated) and for Honduras by Wilson and McCranie (2004).*
C. salvadorensis: Mexico to Panama.	**C. salvadorensis** *occurs in Costa Rica (Anon., 2007a), El Salvador (Anon., 1997), Guatemala (Anon., 2005), and Honduras (Anon., 2005), as well as Mexico and Panama. It is not clear if it has been recorded from Belize and Nicaragua.*
C. tonduzii: Mexico to Panama.	**C. tonduzii** *occurs in Belize (d'Arcy, 1987), Costa Rica (Anon., 2007a), El Salvador (d'Arcy, 1987), Guatemala (d'Arcy, 1987), Honduras (UNEP-WCMC database) and Nicaragua (UNEP-WCMC Database), as well as Mexico and Panama.*
IUCN Global Category	
C. odorata is categorized as VU A1cd+2cd (Assessed 1998, Criteria ver 2.3)	C. fissilis: *Endangered A1acd+2cd (Assessed 1998, Criteria version 2.3).* C. lilloi: *Endangered A1a+2cd (Assessed 1998, Criteria version 2.3).*

Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP13) Annex 2a)

A) Trade regulation needed to prevent future inclusion in Appendix I
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences

C. odorata is most successful in drier closed subtropical forest conditions and is rare in evergreen forests; however, it is a fast-growing species that may colonize secondary forest, abandoned pastures and agricultural land. The species needs an annual rainfall between 1 200–2 500 mm and a mean annual temperature of 20–32°C. Trees bear fruit from the age of 10 to 15 years and may attain a diameter of 1 meter in 50–60 years. It may reach 30+ m in height and 2.5 m in diameter. Regeneration is generally poor except in situations where the canopy is opened up.	
The distribution is fragmented due to extensive deforestation in the neotropical region. No estimates of the current total population of *C. odorata* are available. Two 1998 reports suggested that the species occurred in abundance, notably in Central America, but a 2004 paper reported that, although widespread, it was not common throughout moist tropical American forests. Population densities varied from 1 tree per 100 ha in Nicaragua to almost pure stands in Manu National Park, Peru. Exploitation has reduced populations of this species in many countries and the proposal notes that it is becoming rare in Argentina, Barbados, Bolivia and Puerto Rico; threatened in Belize; threatened in Nicaragua by unsuitable procedures including forest fires; threatened in Costa Rica where the species' habitat has been reduced by almost 60%. Greatly reduced in Guatemala. Once a common species in Panama, now most trees are less than 50 cm in diameter, although it is still present in some	*The SS indicates widespread declines of* C. odorata *in many countries, particularly in Central America, but does not provide information about the status or trends of the species in Colombia, Ecuador, French Guiana, Guyana, Suriname and Venezuela.* C. odorata *is listed as a harvestable species in Guyana by the National Agricultural Research Institute (1995), although no information is given about its exploitation. No further information has been located regarding the status of the species in these countries.* *In Peten, Guatemala, densities of* C. odorata *and* Swietenia macrophylla *of up to 309 per ha were encountered in managed forest areas (Heredia, 2003).*

Supporting Statement (SS)	Additional information
National Parks. There are reports of harvest of trees in Mexico before having produced a seed crop (ie less than 10–15 years old).	
C. odorata is perhaps the most important local timber for domestic use in tropical America. The wood is very durable and is used for a variety of light building work, joinery and cabinet work. The bark and other parts are used in traditional medicine in various countries.	*In Peru in 2006, some timber exporters 'indicated that, as a result of problems associated with the issuing of CITES certificates, customers were looking for mahogany substitutes such as Spanish Cedar* (Cedrela odorata)' (Castaño, 2006).
The timber of *C. odorata* is usually considered next in value in the New World after *Swietenia mahagoni* and it has played a major role in the timber trade throughout its range. The main products involved in international trade come from the timber, and include logs, sawnwood, plywood and veneer. Significant quantities have been exported recently from Bolivia and Peru, with small quantities from Guatemala, Nicaragua, Suriname and Venezuela. Brazil, Colombia and Ecuador exported large quantities in the mid 1990s but have not featured in very recent trade data.	*The SS provides very little information about species other than* C. odorata*, presumably because the proponent considered that the other species were only relevant for look-alike reasons.* *However, the populations of both* C. fissilis *and* C. lilloi have been severely reduced by exploitation (IUCN, 2006). *In El Salvador*, C. fissilis*,* C. odorata, C. salvadorensis *and* C. tonduzii *are included in an official list of species threatened with extinction (Anon., 1997). In the Area Protegida Trinacional Montecristo, on the borders of El Salvador, Guatemala and Honduras both* C. odorata *and* C. salvadorensis *are considered to be threatened with extinction (Anon., 2005).* C. odorata*,* C. fissilis *and* C. montana *were considered to be endangered in Ecuador by a meeting of specialists in the flora of the country; the original populations of* C. odorata *have been depleted (TRAFFIC/EcoCiencia, 1996).*
Trade data provided from the CITES Trade Database and INRENA show increasing exports from Peru since the Appendix III listing in 2001. Bolivia, Brazil and Peru were the main exporting range States.	*The International Tropical Timber Organisation (ITTO) (2005) reported the following exports in 2005:* C. odorata *logs from Mexico in 2003 and 2004 (< 1 000 m^3);* C. fissilis *sawnwood from Bolivia in 2003 (13 000 m^3) and 2004 (16 000 m^3), and veneer in 2003 and 2004 (< 1 000 m^3);* Cedrela *spp. sawnwood from Peru in 2003 and 2004;* Cedrela *spp. sawnwood from Trinidad and Tobago in 2003 and 2004 (< 1 000 m^3).*
One case of illegal trade in Peru, involving timber of *C. odorata* and other species, is documented. Cases of illegal logging, some of which subsequently involve exports, are apparently widespread.	*Macqueen* et al. *(2003) noted that 'While Brazilian timber exports comprise a small percentage of total timber production, Brazil is still the second largest exporter of tropical sawnwood (900 000m^3) principally of high value species such as* Tabebuia *spp. and* Cedrela *spp.'* *In Ecuador, Vigilancia Verde detected small illegal movements from the Pastaza region and also illegal trade of* Cedrela *from Peru to Cuenca city, where timber is used for furniture (Anon., 2003). In Guayaquil Port, the environmental police seized some containers with* Cedrela *logs, which lacked the necessary CITES Certificates of Origin (Hilger, 2006).* *In Peru, the Minister of Agriculture and agents of the National Natural Resources Institute (INRENA) 'discovered selective plundering of valuable hardwood species – mainly mahogany and cedar and verified the existence of unauthorized logging roads built using heavy equipment in the protected forests of Iñampari and Iberia, which caused grave ecosystem damage in Madre de Dios'. Iñampari and Iberia are unauthorized areas. A ban was imposed on cedar and mahogany logging in Madre de Dios, effective from 1 January 2000 until the extent of the risk could be determined (AIDA and SPDA, 2002).*

Supporting Statement (SS)	Additional information

Inclusion in Appendix II to improve control of other listed species

A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP 13) Annex 2a or listed in Appendix I

The wood from all *Cedrela* spp. is very similar in appearance and it is probably impossible to distinguish which species is involved in the products in trade. The wood can also be confused with that from *Swietenia* spp. but can be distinguished by a number of different characters.	*In Peru, apparently CITES Certificates of Origin issued by INRENA since March 1996 were not distinguishing between* Swietenia macrophylla *and* Cedrela *shipments (TRAFFIC, 2002).* *A further example of identification problems is provided by Blundell and Rodan (2003) who noted that there had been a recommendation to Customs in Canada to create HTS codes for timber species easily confused with genuine Latin American mahogany, e.g. the African mahoganies,* Cedrela *spp., and lignum-vitae* Guaiacum *spp.*

Other information

Threats

Widespread deforestation in the range of *C. odorata*, particularly in tropical dry forests is the biggest threat to the species, but this is exacerbated by illegal logging and selective logging for this and other species. It is claimed that 'its distribution has been diminished by excessive exploitation over its entire range to the extent that large trees of good form and size are now rarely found.' Inefficient logging and timber processing leads to much wastage of the harvested timber.	*These comments apply equally to* C. fissilis *and* C. lilloi *(IUCN, 2006) and to some extent to* C. salvadorensis *and* C. tonduzii *at least in Central America.*

Conservation, management and legislation

C. odorata has been protected in Nicaragua since 1997, there is a total logging ban in Bolivia and commercial logging is prohibited within national reserves in Peru (although there is much abuse of this legislation). The species occurs in protected areas in Bolivia, Costa Rica, Guatemala, Mexico, Peru, U.S. Virgin Islands and Venezuela. *C. odorata* was listed in CITES Appendix III by Peru on 12 June 2001, followed by Colombia on 29 October 2001. In Belize felling is restricted to above 72 inches (1.8 m) Brazil began reforestation/forest enrichment projects in 1989, Puerto Rico has extensively planted seedlings in secondary forests. Costa Rica is developing propagation technologies for multiplication, conservation and genetic improvement. Honduras has a programme for conserving genetic material for future reforestation. FSC certification has been given to 19 enterprises for *C. odorata.*	C. odorata *occurs in protected areas in Ecuador (Sangay Foundation, 2001), Honduras (Davis* et al.*, 1997) and Puerto Rico (Acevedo-Rodriguez and Axelrod, 1999).* *In Ecuador, exports of* Cedrela *spp. were prohibited under Law No. 147, RO/901 of 25 March 1992. It was listed in 1995 as a threatened timber species (INEFAN Resolution No. 031, 20 July 1995); this was revised via INEFAN Resolution 046 (1996) and modified in 1997 by INEFAN Resolution No. 033, 1997, where it was listed as a species prohibited from export. In 2000, through Decree 131, the ban was suspended. In 2004, this measure was replaced with a conditional logging category under the new Forestry Norms for Sustainable Forestry Management (Ministerial Agreements 037 and 039). In 2007, a temporal ban (two years) was established for* Swietenia macrophylla *and* Cedrela odorata *in order to diminish illegal trade (El Comercio, 2007, Ministerial Agreement 167, Registro Oficial Nro. 18 – Jueves 8 de Febrero del 2007).* *In Peru, Law 27308 (Forest and Wild Fauna Regulation) imposed restrictions on exports of the two main forestry species,* S. macrophylla *and* Cedrela *spp. (TRAFFIC, 2002).*

Artificial propagation

C. odorata has been widely introduced into plantations throughout the world, in some areas producing much greater yields than those shown by many native populations.	*In some areas it is proving invasive (Anon., 2007b).*

Reviewers:
Ximena Buitron**,** S. Oldfield; TRAFFIC South America.

Background to Analyses of Proposals 34–37: Orchids and *Taxus*

All the following proposals deal with trade in specimens of artificially propagated hybrids and, in the case of Proposals 36 and 37, cultivars of various plants in taxa that are currently included in Appendix II of the Convention. In discussing these, it is important to understand the terms “specimen”, “species”, “artificially propagated”, “hybrid” and “cultivar”, and in particular what their standing is under the Convention.

Only the terms “species”, “specimen” and “artificially propagated” are referred to in the Convention and only the former is defined. The term “artificially propagated” is defined in Resolution Conf. 11.11 (Rev. CoP13) regarding trade in plants. A determination on how to treat hybrids under the Convention is also included in this Resolution. The term “cultivar”, although it features in current annotations to the Appendices, is not defined or otherwise referred to in any current Resolution or Decision.

Species is defined as: any species, subspecies, or geographically separate population thereof.

Specimen means “any animal or plant, whether alive or dead” and, in the case of a plant: for species included in Appendix I, any readily recognisable part or derivative thereof; and for species included in Appendices II and III, any readily recognisable part or derivative thereof specified in Appendices II and III in relation to the species.

Artificially-propagated specimens
The Convention states: “Where a Management Authority of the State of export is satisfied that any specimen of a plant species was artificially propagated, or is a part of such a plant, or was derived therefrom, a certificate by that Management Authority to that effect shall be accepted in lieu of any of the permits or certificates required under the provisions of Article III, IV or V.”
There is no provision under the Convention for exempting whole specimens of any species included in the Appendices on the basis of their being artificially propagated. This is the reason for Proposal 37, submitted at the request of the Standing Committee to rectify the current listings for four yew *Taxus* species that exempt artificially propagated specimens and are in contravention of the provisions of the Convention. The situation with parts and derivatives of plants in Appendices II and III is less clear. As these have to be both specified and readily recognisable to be included, it could be argued that where parts and derivatives of artificially propagated plants could be readily distinguished (by labelling or otherwise) from the same parts and derivatives of wild plants of that species, then it is legitimate to discriminate between the two in the listing. It could also be argued that the intent of the phrasing in the Convention is that the part and derivative must be readily recognisable as being part of the species concerned and its provenance is not relevant, so it should not be possible to differentiate between the two in their treatment in the Appendices (*i.e*. if cut flowers of a species are excluded then this should be the case whether the plant in question were artificially propagated or not). In their use of annotations to date (notably #1, #2, #4 and #8) the Parties appear to have decided on the former interpretation.

Hybrids
Resolution Conf. 11.11 (Rev. CoP13) states:

> *“hybrids shall be subject to the provisions of the Convention even though not specifically included in the Appendices if one or both of their parents are of taxa included in the Appendices, unless the hybrids are excluded from CITES controls by a specific annotation in Appendix II or III.”*

Here the Parties have apparently implicitly accepted that hybrids are entities equivalent to “species” as treated under the Convention. This interpretation is in conformity with the International Code of Botanical Nomenclature (the Vienna Code, revised 2005) which states (Article 3): “The principal ranks of nothotaxa (hybrid taxa) are nothogenus and nothospecies. These ranks are the same as genus and species. The prefix ‘notho’ indicates the hybrid character.”

If the Parties have accepted hybrids as entities equivalent to species under the Convention, it follows that hybrids can be included or excluded from the Appendices in the same way. However, it also follows that exemptions for hybrids are on the basis of their being identifiable (notho)taxa that can be excluded on the basis of the paragraph in Resolution Conf. 11. (Rev CoP13 above) and *not* on the basis of their being artificially-propagated. Under this interpretation the current annotations for several plant taxa in the Appendices (cacti, *Cyclamen persicum,* euphorbias and orchids), which specify exemption of artificially propagated hybrids (and in some cases cultivars—see below), are at the very least redundantly phrased and at best misleading: if the named taxa are excluded from the provisions of the Convention, then they must be so whether artificially propagated or not.

However, in some of the taxa currently covered by these exemptions (notably the four orchid genera) wild hybrids are known. Depending on interpretation, these may or may not be covered by the current annotation (although it is difficult to see any justification for their not being covered). If they are covered, and therefore exempt from the provisions of the Convention, they will be so whether wild collected or not. By extension, if hybrids in these genera are excluded from the Convention, it is difficult to see what standing the elaborate description of the conditions attached to their exemption can have (see Introduction to Orchid Proposals and analyses of Proposals 34 and 35 for details). This is because once a species, and by extension a hybrid, is excluded from the provisions of the Convention, no conditions can be attached to that exclusion, as they no longer fall under the remit of the Convention.

It seems that these conditions are designed to show that the specimens in question are indisputably of hybrid origin, and by implication are artificially created hybrids. However, they cannot distinguish between artificially created hybrids, naturally occurring hybrids (that may be artificially propagated) or cultivars of individual species (see below).

A solution to the problem of the treatment of wild hybrids (which are common in all groups of orchids) could be use of the wording “artificially created” hybrids, or “hybrid taxa not known to occur in the wild”. However, even if this were done, it is not easy to see how the attachment of conditions regarding the state of specimens to be exempted can be justified under the Convention.

Cultivars

It has been assumed (for example in the supporting statement to Proposal 37) that cultivars are treated as equivalent to hybrids under the Convention. However, in the absence of any definition of the term “cultivar” in the Convention, there seems to be no justification for this in any internationally accepted codes of nomenclature.

The International Code of Botanical Nomenclature defines “cultivar” as: “A special category of plants used in agriculture, forestry, and horticulture defined and regulated in the International Code of Nomenclature for Cultivated Plants (ICNCP) (Art. 28 Notes 2, 4, and 5).” (Appendix VII).

The latter code defines a cultivar as: “An assemblage of plants that has been selected for a particular attribute or combination of attributes and that is clearly distinct, uniform and stable in these characteristics and that when propagated by appropriate means retains these characteristics” (ICNCP Article 2.2).

Although cultivars may be of hybrid origin, very often they are not. They may also not necessarily be the result of selective breeding in cultivation. The International Code of Nomenclature for Cultivated Plants states: “An assemblage of individual plants grown from seed derived from uncontrolled pollination may form a cultivar when it meets the criteria laid down in Article 2.2 and when it can be distinguished consistently by one or more characteristics even though the individual plants of the assemblage may not necessarily be genetically uniform” (Article 2.11). Also: “An assemblage of plants grown from seed that is repeatedly collected from a particular provenance and that is clearly distinguishable by one or more characters (a topovariant) may form a cultivar” (Article 2.15), and: “Plants of a species or lower taxonomic unit brought into cultivation may not demonstrate the range of variation associated with that taxonomic unit in the wild: if an assemblage of those plants has one or more attributes that makes it worth distinguishing, it may be given a cultivar or group name” (Article 18.2).

From this it is evident that a cultivar may be indistinguishable from a plant of wild provenance. Cultivars that are simply selected forms of wild plants cannot be distinguished by their names from those that arise from hybridisation in cultivation or intense selective breeding of strains within a single species (ICNCP Article 13.3). Moreover, the ICNCP states that the botanical categories *varietas* (var.) and *forma* (f.) are not the equivalent of cultivar and these terms must not automatically be treated as equivalent.

As noted above, under CITES, the entities that can be included or excluded from the Appendices are specimens, parts or derivatives of “species”. Species are defined as: any species, subspecies, or geographically separate population thereof (Article I). As both the International Code of Botanical Nomenclature and the International Code of Nomenclature for Cultivated Plants make clear, cultivars do not fit into this definition, and it seems therefore that they cannot be considered as entities that have standing under the Convention separate from that of the “species” (*sensu* CITES) of which they are a part. It would appear that whole specimens of cultivars cannot therefore be excluded from the Appendices without excluding the species.

This has implications for the current exemptions in the Appendices of artificially propagated cultivars of a number of species (*Schlumbergera truncata* and *Opuntia microdasys* (Cactaceae); *Cyclamen persicum* (Primulaceae); and *Euphorbia trigona* (Euphorbiaceae) (although *E. trigona* is only known in cultivation, so this exemption effectively excludes the entire taxon).

Introduction and background to the orchid proposals

The entire orchid family or Orchidaceae—the world's largest plant family, with around 25,000 species—was included in the CITES Appendices in 1975, because of concerns about the impact of collection for the international horticultural trade on wild populations of a number of species and genera. Although the vast majority of orchid species did not feature in international trade, or did so in negligible quantities, it was considered that inclusion of the entire family in Appendix II would assist in the control of trade in those species for which wild-collection posed a threat. Several species of particular concern were included in Appendix I at that time.

Although there was (and is) substantial horticultural interest in some orchid species, grown as unimproved or wild-type forms, the great majority of orchids grown today are artificially created and propagated forms. These are usually hybrids, or grexes (progeny resulting from a cross of two particular parental plants), but also sometimes selected forms of particular species. Unlike most other groups of plants, orchids hybridise widely and easily. For the last 150 years they have been crossed in cultivation to produce over 110 000 named grexes. Orchid hybrids can involve up to 20 distinct species from up to nine distinct natural genera. The first hybrid was made in 1854 and detailed records have been maintained since that time. Registered hybrids, with their parentage and originator (if known) are published in the International Register of Orchid Hybrids (the Sander's List), maintained by the Royal Horticultural Society in the UK. A supplement to this is produced four times a year. During 2006 over 2 000 new grexes were registered.

There was already significant international trade in artificially propagated orchids at the time CITES came into force, for both specialist markets and the general horticultural trade. Since then, the latter trade has grown enormously, thanks to worldwide economic growth, the globalisation of much of the horticultural industry, and technical advances in orchid propagation. Currently, CITES records show several tens of millions of artificially propagated orchids traded internationally each year. This trade covers a very wide range of named forms, the great majority in three genera (*Cymbidium, Dendrobium* and *Phalaenopsis*) and of hybrid origin.

Regulating this trade is perceived to place a significant burden on CITES management authorities, exporters and importers with arguable conservation benefit. At the last two meetings of the CoP (CoP12, Santiago, Chile, November 2002 and CoP13, Bangkok, Thailand, October 2004) proposals were put forward to exclude at least a portion of this trade from the provisions of CITES whilst still retaining the general listing for the family Orchidaceae in Appendix II. Modified forms of the original proposals were accepted, leading to complex and unusual annotations, an integral part of which has been a determination of the kinds of consignment that may be excluded as well as guidelines to determine how specimens within those consignments may be recognised as appropriate for exclusion.

At **CoP 12** a decision was made to exclude artificially propagated specimens of hybrids within the genus *Phalaenopsis* from the provisions of the Convention under a series of conditions ("that shipments should be in containers each of which had at least 100 plants that were readily recognisable as artificially propagated, with no signs of being wild-collected, with each container only having one hybrid and with each shipment accompanied by appropriate documentation"). Plants not clearly qualifying for the exemption were to be accompanied by appropriate CITES documents. This exemption came into force in early 2003.

The Plants Committee, at its 14th meeting (Windhoek, February 2004), discussed implementation of this annotation where it was reported that an informal survey of selected orchid-exporting and importing countries and consultations with US CITES enforcement officials had found no shipments of *Phalaenopsis* hybrids without CITES export certificates, indicating that the exemption allowed for under this annotation had not been taken up. Three reasons were given for the failure to use this exemption: (1) some exporters were not aware of its existence; (2) some exporters were aware of it, but feared that importing countries would not recognise it and would detain shipments that lacked CITES documents; and (3) the current minimum number of plants per container (100) was too high because most shipments involved containers with far fewer plants.

At **CoP 13** three different proposals were considered, one to exclude all artificially propagated orchid hybrids, one to exclude artificially propagated hybrids of a number of genera (*Cymbidium, Dendrobium (nobile-* and *phalaenopsis*-types only)*, Miltonia, Odontoglossum, Oncidium, Phalaenopsis* and *Vanda*) when traded in a flowering state and meeting a number of other conditions similar to those applying under the then existing exemption for *Phalaenopsis* hybrids, and one modifying the existing exemption for *Phalaenopsis* hybrids to reduce the minimum number of plants per container. Modified versions of the first two proposals were accepted, resulting in the present situation, which came into effect in early 2005, as follows:

Artificially propagated specimens of hybrids of the genera Cymbidium, Dendrobium, Phalaenopsis *and* Vanda *are not subject to the provisions of the Convention when:*

1) *the specimens are traded in shipments consisting of individual containers (i.e. cartons, boxes or crates) each containing 20 or more plants of the same hybrid;*
2) *the plants within each container can be readily recognized as artificially propagated specimens by exhibiting a high degree of uniformity and healthiness; and*
3) *the shipments are accompanied by documentation, such as an invoice, which clearly states the number of plants of each hybrid.*

Artificially propagated specimens of the following hybrids:
– Cymbidium*: Interspecific hybrids within the genus and intergeneric hybrids*
– Dendrobium*: Interspecific hybrids within the genus known in horticulture as "*nobile*-types" and "*phalaenopsis*-types"*
– Phalaenopsis*: Interspecific hybrids within the genus and intergeneric hybrids*
– Vanda*: Interspecific hybrids within the genus and intergeneric hybrids*

are not subject to the provisions of the Convention when:

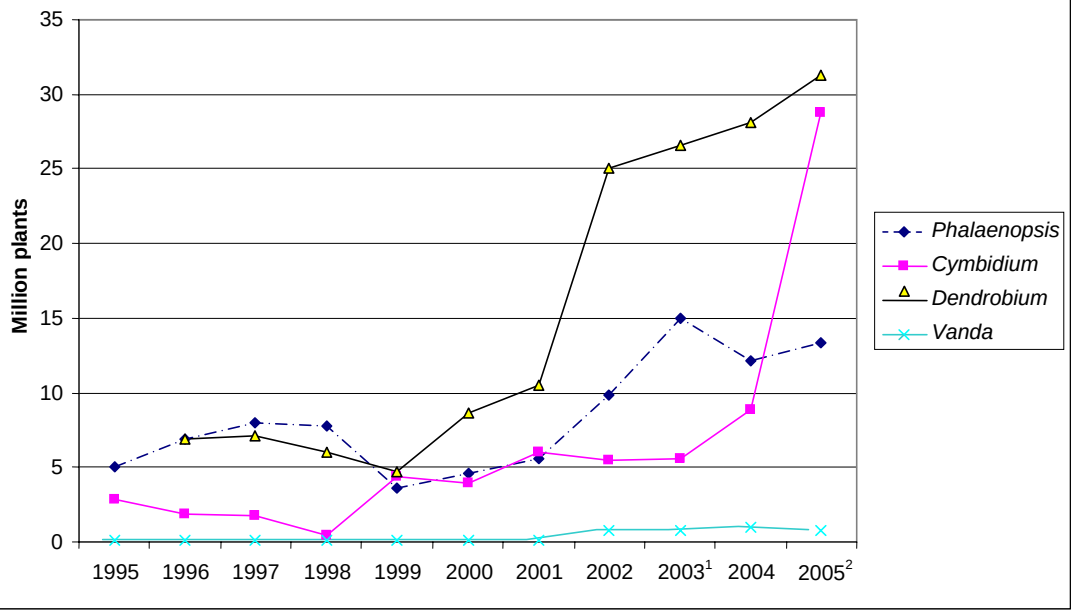
1) *they are traded in flowering state, i.e. with at least one open flower per specimen, with reflexed petals;*
2) *they are professionally processed for commercial retail sale, e.g. labelled with printed labels and packaged with printed packages;*
3) *they can be readily recognized as artificially propagated specimens by exhibiting a high degree of cleanliness, undamaged inflorescences, intact root systems and a general absence of damage or injury that could be attributable to plants originating in the wild;*
4) *the plants do not exhibit characteristics of wild origin, such as damage by insects or other animals, fungi or algae adhering to leaves, or mechanical damage to inflorescences, roots, leaves or other parts resulting from collection; and*
5) *the labels or packages indicate the trade name of the specimen, the country of artificial propagation or, in the case of international trade during the production process, the country where the specimen was labelled and packaged; and the labels or packages show a photograph of the flower, or demonstrate by other means the appropriate use of labels and packages in an easily verifiable way.*

The two parts of the annotation deal with different cases. The first is more general, and does not require specimens in trade to be in flower but does require them to be in containers each containing 20 or more plants of one hybrid. The second requires plants to be in flower but does not impose a minimum requirement for the number of plants in a container. In addition, the former applies generally to the genus *Dendrobium* while the latter applies only to '*nobile*-type' and '*phalaenopsis*-type' hybrids within the genus.

Due to the unusual nature of the annotation, the CoP directed Parties to monitor its implementation and report to the Plants Committee, which was in turn directed to report to the 14th meeting of the CoP (Decisions 13.98 and 13.99). At the request of the Plants Committee, the Parties were subsequently asked a number of questions regarding the annotation (Notification 2005/047, August 2005). Twelve Parties responded and their answers were presented in tabular form to the Plants Committee in July 2006. Most respondents commented on the complexity of the existing annotation, but were generally in favour of the principle of excluding artificially propagated orchid hybrids from the provisions of the Convention. All indicated that it was implemented in their country, in the sense that it was incorporated into domestic regulations enacting CITES and, in some cases, that its contents had been publicised or communicated directly to the orchid-trading community. However, no indication was given as to whether the exemption was actually being used.

Inspection of export figures of artificially propagated plants reported under CITES gives an indication of the current level of uptake of the exemption. Figure 1 below shows reported exports for the four genera for the period 1995–2005. It is difficult to discern a major impact on reporting of the exemptions. For *Phalaenopsis,* the exemption came into effect in early 2003 and there is a drop in reported trade between 2003 and 2004, which may be attributable to it (although see above). However, reported trade then increased between 2004 and 2005. Reported trade in *Dendrobium* and *Cymbidium* has continued to increase, in the latter case dramatically between 2004 and 2005.

Figure 1: Gross exports of artificially propagated specimens of orchid genera subject to exemptions, 1995–2005



Source: CITES Trade Database
[1] exemption for *Phalaenopsis* came into effect in early 2003
[2] exemption for *Cymbidium, Dendrobium* and *Vanda* came into effect in early 2005

The implementation of the annotation and its possible expansion were discussed at the 16th meeting of the Plants Committee (Lima, Peru, July 2006). One outcome of this discussion was the text of Proposal 35, submitted by Switzerland as the Depositary Government.

The Committee decided that it was premature to extend the current annotation to other genera of Orchidaceae. However, it did agree that a draft Decision should be submitted for consideration at CoP14 as follows:

Directed to the Parties and to the Plants Committee

The Plants Committee shall monitor and assess possible conservation problems arising from the implementation of the annotation for Orchidaceae spp. included in Appendix II. On the basis of information and identification materials provided by exporting and importing countries, the Plants Committee should develop recommendations concerning possible further exemptions for artificially propagated hybrids of Orchidaceae spp. included in Appendix II, in particular for the genera *Miltonia*, *Odontoglossum* and *Oncidium*, taking into consideration the capacities of countries to implement and control such exemptions effectively."

Proposal 34 which entails just such an expansion, would appear to pre-empt this decision. It is submitted by Switzerland acting on its own behalf.

Amendment of the annotation to Orchidaceae spp. included in Appendix II to read as follows:

"Artificially propagated hybrids of the following genera are not subject to the provisions of the Convention, if conditions, as indicated under a) and b), are met: *Cymbidium, Dendrobium, Miltonia, Odontoglossum, Oncidium, Phalaenopsis* and *Vanda*:

a) Specimens are readily recognisable as artificially propagated and do not show any signs of having been collected in the wild such as mechanical damage or strong dehydration resulting from collection, irregular growth and heterogeneous size and shape within a taxon and shipment, algae or other epiphyllous organisms adhering to leaves, or damage by insects or other pest; and

b) i) when shipped in non flowering state, the specimens must be traded in shipments consisting of individual containers (such as cartons, boxes, crates or individual shelves of CC-containers) each containing 20 or more plants of the same hybrid; the plants within each container must exhibit a high degree of uniformity and healthiness; and the shipment must be accompanied by documentation, such as an invoice, which clearly states the number of plants of each hybrid; or

ii) when shipped in flowering state, with at least one fully open flower per specimen, no minimum number of specimens per shipment is required but specimens must be professionally processed for commercial retail sale, e.g. labelled with printed labels or packaged with printed packages indicating the name of the hybrid and the country of final processing. This should be clearly visible and allow easy verification.

Plants not clearly qualifying for the exemption must be accompanied by appropriate CITES documents."

Proponent: Switzerland.

This analysis should be read in conjunction with the Background to the analysis of Proposals 34–37 and the Introduction and background to the orchid proposals.

Summary:
Note: This proposal differs from the next proposal (35) only in the inclusion of three additional genera (*Miltonia, Odontoglossum* and *Oncidium*). The analysis will therefore confine itself to discussion of these. See the analysis of proposal 35 for further discussion.

Miltonia, Odontoglossum and *Oncidium* are three closely related genera of orchids from central and south America and, in the case of *Oncidium*, southern parts of North America. The three genera are included in what is known as the *Oncidium/Odontoglossum* alliance, along with some 16 other genera from the Americas. The *CITES Orchid Checklist* currently recognises six species and eight naturally occurring hybrids of *Miltonia.* The genera *Odontoglossum* and *Oncidium* have not yet been covered in the checklist. There are generally considered to be around 100 species of the former and some 300 species of the latter (although both totals may be expected to be reduced considerably following systematic review).

Plants in the genera, particularly *Oncidium*, are popular in cultivation and a very wide range of forms is grown, including species, hybrids within each genus, hybrids between the genera and hybrids that include these genera and others (particularly other genera in the *Oncidium/Odontoglossum* alliance). Recorded international trade in artificially propagated *Oncidium* is substantial, with an average of just over one million plants a year during the period 1996–2005. Recorded trade in artificially propagated *Odontoglossum* is much lower, averaging just over 20 000 a year during the same period. Recorded trade in artificially propagated *Miltonia* has also been low for most of the period, but increased greatly in 2005, when 270 000 were reported as exports form the Republic of Korea.

Recorded trade in wild-collected plants of *Miltonia* and *Odontoglossum* has also been at a negligible level (34 and 56 plants since 1997 respectively). However there has been greater reported trade in wild-collected plants of *Oncidium,* with over 15 000 reported in trade for the period 1996–2005. The trade involved some 60 species. In addition around 2 000 plants were reported at generic level only. Most species were traded in small quantity, with only *O. carthagenense, O. lindenii, O. luridum, O. sphacelatum* recorded in amounts of over 1 000. Exports were recorded from some 16 range States and a number of non range States (CITES Trade Database).

Analysis: See Background to the analysis of Proposals 34–37 and analysis to Proposal 35. On the basis of the arguments in the Background (which discuss the way that hybrids and artificially propagated plants can be dealt with under the Convention) it is questionable whether the conditions in paragraphs a and b can have any standing.

Wild hybrids in at least one of the additional genera proposed here (*Miltonia*) are known. In general, plants in the *Oncidium/Odontoglossum* alliance hybridise readily in cultivation and a very large number of intrageneric and intergeneric hybrids exists. As discussed in the analysis to Proposal 35, it is not clear whether hybrids with any parentage of *Miltonia, Oncidium* and *Odontoglossum* are intended to be excluded, or only intrageneric hybrids, or intrageneric hybrids and hybrids whose parentage only includes two or more of the seven genera proposed.

Trade in a wide range of species and hybrids in the three additional proposed genera has been recorded. Implementation of this annotation could conceivably create enforcement problems.

Supporting Statement (SS)	Additional information
Taxonomy	
Range	
All artificially propagated hybrids that do not occur naturally in the wild.	Miltonia: *Argentina, Brazil, Paraguay, Venezuela (Roberts* et al., *2001).* Odontoglossum*: Chiefly Central America and northern South America.* Oncidium: *Widespread in the Americas and Caribbean from southern USA southwards.*
IUCN Global Category	
	The conservation status of orchid species has not been comprehensively assessed. No species of Miltonia*,* Odontoglossum *or* Oncidium *is included in the current IUCN Red List of Threatened Species. Two species of* Odontoglossum *(*O. hallii *and* O. longipes*) were classified as Vulnerable (pre-1994 criteria) and sixteen species of* Oncidium *were classified as variously threatened (one Endangered, twelve Vulnerable, two Rare and one Indeterminate, all pre-1994 criteria) in the* 1997 IUCN Red List of Threatened Plants*.*
Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP13) Annex 2 a)	
A) Trade regulation needed to prevent future inclusion in Appendix I	
Not relevant as all specimens proposed for exemption are artificially propagated hybrids.	CITES Orchid Checklist *recognises eight naturally occurring hybrid* Miltonia, *all recorded from Brazil.*
B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences	
Not relevant as all specimens proposed for exemption are artificially propagated hybrids	.
Inclusion in Appendix II to improve control of other listed species	

Supporting Statement (SS)	Additional information
A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP13) Annex 2 a or listed in Appendix I	
Annotation provides clear guidelines for distinguishing artificially propagated plants from wild-collected ones.	*CITES trade data report negligible trade in wild-collected plants of* Miltonia *and* Odontoglossum *(34 and 56 plants since 1997 respectively).* *Over 15 000 plants of* Oncidium *reported as wild-collected are recorded in CITES trade data for the period 1996–2005. The trade involved some 60 species. In addition around 2 000 plants were reported at generic level only. Most species were traded in small quantity, with only* O. carthagenense, O. lindenii, O. luridum, O. sphacelatum *recorded in amounts of over 1 000. Exports were recorded from some 16 range States and a number of non range States.* *Artificially propagated* Miltonia *in trade for the period 1996 to 2005 totalled just under 340 000 of which 270 000 were exports from the Republic of Korea in 2005; artificially propagated* Odontoglossum *in trade in the same period totalled 225 000 specimens; artificially propagated* Oncidium *for that period totalled 11.7 million specimens.*

Reviewers:
S. Ritterhausen, TRAFFIC East/Southern Africa.

Amendment of the annotation to Orchidaceae spp. included in Appendix II to read as follows:

"Artificially propagated hybrids of the following genera are not subject to the provisions of the Convention, if conditions, as indicated under a) and b), are met: *Cymbidium, Dendrobium, Phalaenopsis* and *Vanda*:

a) Specimens are readily recognizable as artificially propagated and do not show any signs of having been collected in the wild such as mechanical damage or strong dehydration resulting from collection, irregular growth and heterogeneous size and shape within a taxon and shipment, algae or other epiphyllous organisms adhering to leaves, or damage by insects or other pest; and

b) i) when shipped in non flowering state, the specimens must be traded in shipments consisting of individual containers (such as cartons, boxes, crates or individual shelves of CC-containers) each containing 20 or more plants of the same hybrid; the plants within each container must exhibit a high degree of uniformity and healthiness; and the shipment must be accompanied by documentation, such as an invoice, which clearly states the number of plants of each hybrid; or

ii) when shipped in flowering state, with at least one fully open flower per specimen, no minimum number of specimens per shipment is required but specimens must be professionally processed for commercial retail sale, e.g. labelled with printed labels or packaged with printed packages indicating the name of the hybrid and the country of final processing. This should be clearly visible and allow easy verification.

Plants not clearly qualifying for the exemption must be accompanied by appropriate CITES documents."

Proponent: Switzerland as Depositary Government at the request of the Plants Committee.

This analysis should be read in conjunction with the Background to analyses of Proposals 34–37 and the Introduction and Background to the orchid proposals

Summary: This proposal, which is the result of deliberations by the Plants Committee, is an attempt to rationalise the existing annotation for the family Orchidaceae exempting artificially propagated hybrids in four genera from the provisions of the Convention.

Analysis: See Background to the analysis of Proposals 34–37, which discusses the way that hybrids and artificially propagated plants can be treated under the Convention. On the basis of the arguments in the Background, it is questionable whether the conditions in paragraphs a) and b) of the proposed annotation, and the numbered paragraphs of the existing annotations have any standing.

Should the Parties decide that they do, the following points may be worth considering:

The proposal concerns only artificially propagated hybrids and can therefore, of itself, have no direct impact on wild populations of species included in the Appendices. It may conceivably have an indirect impact by creating an avenue whereby wild-collected specimens of orchids included in the Appendices could be traded in contravention of CITES. However, this seems unlikely, particularly as the visual criteria for recognising plants as artificially propagated are more detailed than those included in the current annotation. Moreover, no species in the genera concerned is currently included in Appendix I, so that commercial trade in wild-collected specimens of the orchids that most closely resemble those included in the proposed exemption is permitted under CITES (though not necessarily under national legislation) as

long as the relevant conditions in the Convention are met. The orchids included in the proposed exemption do not closely resemble any Appendix-I orchids, so it is unlikely that trade of any of the latter would be attempted under this exemption.

Implementation and interpretation of this annotation may prove challenging, particularly for enforcement officers, for the following reasons:

1. *Resolution Conf. 11.11 (Rev. CoP13)*, regarding trade in plants, states “hybrids shall be subject to the provisions of the Convention even though not specifically included in the Appendices if one or both of their parents are of taxa included in the Appendices, unless the hybrids are excluded from CITES controls by a specific annotation in Appendix II or III;”.

It is not completely clear from the proposal (nor from the existing annotation) whether the statement “hybrids of the following genera” included in the annotation means:

a. Hybrids within each of the specified genera;

b. Hybrids within each of the specified genera and between any or all of the specified genera;

c. Hybrids that include any of the specified genera in their parentage, but that may also have other genera in their parentage.

From the supporting statement it seems that option c. is that intended. If this is the case, it will not be possible in the case of intergeneric hybrids to determine which satisfy the exemption and which do not without access to detailed orchid genealogies. This is because it is very often not obvious from the name of an artificially created hybrid genus what its parentage is (e.g. the artificial genera *Aranda* and *Ascocenda* both include *Vanda* in their parentage and would therefore qualify for exemption, while the similarly-named *Aliceara* does not). Overall, it seems that roughly half of currently named grexes may qualify for exemption while the other half would not. This seems likely to cause confusion (although in terms of quantities, available data indicate that the great majority of specimens in trade would qualify for exemption).

2. The exemption applies only to hybrids. Improved forms of species, of which there are a number in the genera concerned that feature in the horticultural trade (eg. *Dendrobium nobile, Vanda caerulea*), would, strictly, be excluded from the exemption. As these may be known by cultivar names only (see Background to Analyses of Proposals 34–37 for further discussion of cultivars), they would not be distinguishable through labelling from hybrids.

3. A number of naturally occurring hybrids of the genera concerned are included in the CITES Orchid Checklist (eg: *Phalaenopsis x leucorrhoda* (Philippines), *P. x intermedia* (Philippines), *P. x valentinii* (Malaysia), *Vanda* x boumaniae (Indonesia), *Vanda* x charlesworthii (Myanmar)). The position of these taxa under the exemption is ambiguous. It is not possible to treat artificially propagated whole plants (specimens) differently from wild-collected whole plants under the terms of the Convention (see Background to Proposals 34–37).

4. The proposed (and existing) annotation sets out criteria by which it is to be judged whether any given consignment qualifies for exemption or not. It further states: “Plants not clearly qualifying for the exemption must be accompanied by appropriate CITES documents”. However, it does not provide guidance as to who should be responsible for making such a judgement. Presumably this is intended to be responsible authorities in importing, exporting and trans-shipping countries. Verification of the criteria implicitly requires inspection of shipments and, under normal circumstances, this falls primarily to enforcement agencies. For exporters and importers to make extensive use of this exemption, they will have to have the confidence that the criteria in the annotation are applied consistently by authorities, including enforcement agencies, in importing, exporting and trans-shipping countries. Where there is any doubt that this will be the case, it seems very likely that exporters and importers will continue to trade these hybrids with CITES documents rather than risk the losses they would incur if shipments were erroneously confiscated or refused import.

Article VII, paragraph 5 of the Convention allows the use of a certificate of artificial propagation issued by a Management Authority to be used as an import or export permit. In *Resolution Conf. 12.3*, the Parties recognised that if certain conditions were met, phytosanitary certificates could serve as such certificates. At least some exporting countries have made use of this to expedite procedures in trade in artificially propagated orchids. However one of these (Republic of Korea) has reported to the Plants Committee that

orchids with such documentation have on occasion been rejected by importing countries. Until exporters have confidence that existing expediting procedures will be adhered to consistently, it seems unlikely that they will make extensive use of further exemptions that are complex and open to differing interpretations.

Reviewers:
S. Ritterhausen, TRAFFIC East/Southern Africa.

Amendment of the listing of *Taxus cuspidata* in Appendix II by:

1. Deleting the phrase "and infraspecific taxa of this species"; and

2. Annotating to read as follows:

"Specimens of hybrids and cultivars are not subject to the provisions of the Convention."

Proponent: United States of America.

This analysis should be read in conjunction with the Background to Proposals 34–37.

Summary: *Taxus cuspidata* was included in Appendix II along with three other Asian Yew *Taxus* species (*T. chinensis, T. fuana* and *T. sumatrana* at CoP13 (effective as of 12/01/05) because of concerns regarding harvesting of wild populations for pharmaceutical purposes, notably the production of taxanes, particularly for the production of the anti-cancer drug paclitaxel. The species were listed with annotation #10 (Designates all parts and derivatives except: a) seeds and pollen; and b) finished pharmaceutical products) and also with an annotation to exclude whole artificially propagated plants in small containers and appropriately labelled. The Himalayan Yew *Taxus wallichiana* had been included in Appendix II in 1994 and is currently also annotated with #10.

As noted in the supporting statement, the latter annotation is contrary to the terms of the Convention, as there is no provision within the Convention for excluding from the Appendices whole specimens (as opposed to parts or derivatives) of any 'species' that is itself included in the Appendices, whether artificially propagated or not. The Standing Committee has therefore asked Switzerland to put forward this proposal to rectify the situation.

Analysis: In the first instance it needs to be determined whether the categories proposed in the amendment are eligible for consideration under the terms of the Convention. To do this hybrids and cultivars need to be considered separately.

Taxus cuspidata hybrids

Hybrids of *T. cuspidata* that are recorded in cultivation have as the other parent either the European Yew *T. baccata* or the Canadian Yew *T. canadensis*, neither of which is included in the appendices. Hybrids with the former are generally known as *T. x media,* with the latter as *T.* x *hunnewelliana* (Collins *et al.*, 2003). It is clearly possible to exclude such hybrids under the terms of the Convention as interpreted in Resolution Conf. 11.11 (Rev. CoP13).

It is not clear, however, from Resolution Conf. 11.11 whether hybrids of *T. cuspidata* with any of the other species that are included in Appendix II would be effectively excluded from the Appendices or not (this is a general problem with interpretation of this resolution with respect to the position of hybrids – see, for example, the analysis of proposal 35). This lack of clarity may create enforcement problems although, as noted above, as far as is known all cultivated and traded hybrids of *T. cuspidata* are with the non-listed *T. baccata* or *T. canadensis*.

Regarding parts and derivatives, excluding hybrids of *T. cuspidata* from the Appendices means that parts and derivatives derived from them are *de facto* excluded. No labelling conditions can therefore be attached to them. This might create enforcement problems as products of, for example, *T. x media* are known to be exported from China, the range State of *T. cuspidata* (TRAFFIC International, 2007). However, as noted in the supporting statement, it is not evident that the problems so created would be any greater than exist at present with some yew species included in the Appendices and others, also used in the pharmaceutical industry, not included.

Taxus cuspidata cultivars

See Background to Proposals 34–37. It is evident that the term cultivar has no standing under the Convention, and it is not therefore possible to exclude cultivars of a species without effectively excluding the whole species. The Parties decided at COP 13 that the species met the criteria for inclusion in Appendix II. There does not appear to be any new information to contradict this.

With regard to parts and derivatives, as noted in the Introduction to Proposals 34–37, the situation is less clear. The Parties must decide whether it is possible to interpret the Convention such that parts and derivatives (of an Appendix-II listed plant such as *T. cuspidata*) derived from artificially propagated plants can be treated in a different way under the Appendices from those derived from wild-collected plants of the same species, and further that, if so, the two can be readily distinguished from each other (which in reality could only be done by labelling, following Resolution Conf. 9.6 rev). If so, then it might be possible to annotate the listing for *Taxus cuspidata* with, for example, 'excludes parts and derivatives of artificially propagated plants'.

Reviewers:
TRAFFIC East/Southern Africa.

A. Deletion of the annotation to *Taxus chinensis*, *Taxus fuana* and *Taxus sumatrana* in Appendix II that reads:

"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"; and

B. Amendment of the annotation to *Taxus cuspidata* to read:

"Artificially propagated hybrids and cultivars of *Taxus cuspidata* 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."

Proponent: Switzerland (as Depositary Government, at the request of the Standing Committee).

This analysis should be read in conjunction with the Background to Proposals 34–37.

Summary: These four species of yew were included in Appendix II at CoP13 (effective as of 12/01/05) because of concerns regarding harvesting of wild populations for pharmaceutical purposes, notably the production of the anti-cancer drug paclitaxel. The species were listed with annotation #10 (Designates all parts and derivatives except: a) seeds and pollen; and b) finished pharmaceutical products) and also with an annotation to exclude whole artificially propagated plants in small containers and appropriately labelled. The Himalayan Yew *Taxus wallichiana* had been included in Appendix II in 1994 and is currently also annotated with #10.

As noted in the supporting statement, the annotation regarding whole artificially propagated plants is contrary to the terms of the Convention, as there is no provision within the Convention for excluding from the Appendices whole specimens (as opposed to parts or derivatives) of any 'species' that is itself included in the Appendices, whether artificially propagated or not. The Standing Committee has therefore asked Switzerland to put forward this proposal to rectify the situation.

If accepted all four species would still retain annotation #10, although this will have been altered to "Designates all parts and derivatives except: a) seeds and pollen; and b) finished products packaged and ready for retail trade", if the relevant parts of Proposal 27 have been accepted.

Analysis:

Taxus chinensis, T. fuana* and *T. sumatrana

If the proposal were accepted, all whole specimens of the above species and their hybrids would be included in Appendix II and subject to regulation whether artificially propagated or not. Although *T. chinensis* is grown as an ornamental outside its range States, there is no evidence of any extensive international trade in specimens of this or the other two species, or hybrids between them, for horticulture.

***Taxus cuspidata* hybrids**

See analysis of Proposal 36 and Background to proposals 34–37. Following the arguments in the Background to Proposals 34–37, the exclusion from the provisions of the Convention of whole specimens of hybrids of *T. cuspidata* (of which the forms in cultivation are largely hybrids with *T. baccata,* generally known as *Taxus x media,* and to a lesser extent hybrids with *T. canadensis* known as *T*. x *hunnewelliana (*see Collins *et al.,* 2003)) is in conformity with the terms of the Convention as interpreted in Resolution Conf. 11.11 (Rev. CoP13). However following the same argument (and the logic behind the present proposal), it is not possible to exclude only artificially propagated specimens of such hybrids: the exemption must apply to all such hybrids, whatever their origin, and by extension to all parts and derivatives derived therefrom. The only recorded hybrids of *T. cuspidata* in trade are with species that do not share any part of the geographical range of *T. cuspidata* and these must therefore originate in artificially propagated or naturalised stock.

Exclusion of parts and derivatives might create enforcement problems as products of, for example, *T. x media,* are known to be exported from China, the range State of *T. cuspidata* (TRAFFIC International, 2007). However, it is not evident that the problems so created would be any greater than exist at present with some yew species included in the Appendices and others, also used in the pharmaceutical industry, not.

It is not clear, however, from Resolution Conf. 11.11 whether hybrids of *T. cuspidata* with any of the other species that are included in Appendix II would be effectively excluded from the Appendices or not (this is a general problem with interpretation of this resolution with respect to the position of hybrids – see, for example, the analysis of Proposal 35). This lack of clarity may create enforcement problems although there is no evidence of the presence in trade of hybrids of *T. cuspidata* with any species other than *T. baccata* and *T. canadensis*, neither of which is included in the Appendices.

***Taxus cuspidata* cultivars**

See analysis of Proposal 26. It would appear that the term 'cultivar' has no standing at present under the Convention and that therefore it is not possible to exclude whole specimens of cultivars from the provisions of the Convention without effectively excluding the whole species. The Parties decided in 2004 that *T. cuspidata* met the criteria for inclusion in Appendix II. No new information has come to light since then to contradict this.

Reviewers:
TRAFFIC East/Southern Africa

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CoP14 Prop. 27 Amendment of the annotations to various plant taxa

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CoP14 Prop. 29 Amendment of the annotation to *Euphorbia* spp. included in Appendix II.

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ANNEXES:

ANNEX 1. Appendix I and Appendix II Biological Criteria (Resolution Conf. 9.24)

ANNEX 2.1. Summary of the IUCN RED LIST Categories and Criteria version 2.3 (IUCN, 1994)

ANNEX 2.2. Summary of the IUCN RED LIST Categories and Criteria version 3.1 (IUCN, 2001)

ANNEX 1. APPENDIX I AND APPENDIX II BIOLOGICAL CRITERIA (Resolution Conf. 9.24 (Rev CoP13))

***Note*: The numbers presented below are meant to serve as guidelines and not as thresholds (see Res Conf 9.24 (Rev CoP 13) Annex 5)**

CRITERIA FOR INCLUSION OF SPECIES IN APPENDIX I – Use of at least one of the A-C criteria for species that are or may be affected by trade.

A. Small Wild Population

Small number of individuals and at least one of the following occurs:	<5 000
i) decline in number of individuals or area and quality of habitat	20%or more in last 5 years or 2 generations
ii) each subpopulation very small	<500
iii) individuals concentrated geographically during one or more life history phase	
iv) large short-term fluctuation in population size	
v) high vulnerability to either intrinsic or extrinsic factors	

B. Restricted Distribution

Restricted area of distribution and at least one of the following occurs:

i) fragmentation/occurrence at very few locations
ii) large fluctuation in area or number of subpopulations
iii) high vulnerability to either intrinsic or extrinsic factors
iv) a decrease (observed, inferred or projected) in any one of the following:
- area of distribution
- area of habitat
- number of subpopulations
- number of individuals
- quality of habitat
- recruitment

C. Declining Wild Population

Marked decline in the number of individuals in the wild which has been either:	historic decline to 5%-30% (5% - 20% for commercially exploited aquatic species) of the baseline population; recent rate of decline 50% or more in last 10 years or 3 generations
i) observed as ongoing or having occurred in the past; or	
ii) inferred or projected on the basis of any one of the following:	
- decrease in area of habitat	
- decrease in quality of habitat	
- levels/patterns of exploitation	
- high vulnerability to either intrinsic or extrinsic factors	
- decreasing recruitment	

CRITERIA FOR THE INCLUSION OF SPECIES IN APPENDIX II
In accordance with Article II, Paragraph 2(a)
Species should be included in Appendix II when at least one of the following criteria is met

A. Regulation of trade in the species is necessary to avoid it becoming eligible for inclusion in Appendix I in the near future

B. Regulation of trade in the species is required to ensure harvesting of specimens from the wild is not reducing wild populations to a level at which its survival might be threatened by continued harvesting or other influences.

In Accordance with Article II, Paragraph 2(b)
Species should be included in Appendix II if it satisfies one of the following criteria

A. The specimens of the species traded resemble specimens of a species included in Appendix II or Appendix I, such that enforcement officers are unlikely to be able to distinguish between them.

B. There are compelling reasons other than those given above in criterion A to ensure that effective control of trade in currently listed species is achieved.

Annex 2.1 Summary of the IUCN Red List Categories and Criteria Version 2.3 (IUCN, 1994)

Use any of the A-E criteria

	Critically Endangered	**Endangered**	**Vulnerable**
A. Population Reduction in 10 years or 3 generations at least: Using either 1 or 2	80%	50%	20%
(1) Population reduction observed, estimated, inferred, or suspected in the past, based on any of the following:			
a) direct observation			
b) an index of abundance appropriate for the taxon			
c) a decline in area of occupancy, extent of occurrence and/or quality of habitat			
d) actual or potential levels of exploitation			
e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites			
(2) Population decline projected or suspected to be met in the future based on b) to e) under (1)			
B. Geographic range in the form of one of the following:			
Extent of occurrence	<100km^2	<5000km^2	<20 000km^2
Area of occupancy	<10km^2	<500km^2	<2000km^2
And 2 of the following 3:			
(1) Severely fragmented:(isolated subpopulations with a reduced probability of recolonisation, once extinct) OR known to exist at # locations	# = 1	# < 5	# < 10
(2) Continuing decline observed, inferred or projected at any rate in any of the following:			
a) extent of occurrence			
b) area of occupancy			
c) area, extent and/or quality of habitat			
d) number of locations or subpopulations			
e) number of mature individuals			

(B continued)	**Critically Endangered**	**Endangered**	**Vulnerable**
(3) Extreme fluctuations in any of the following: a) extent of occurrence b) area of occupancy c) number of locations or subpopulations d) number of mature individuals	>1order/mag	>1order/mag	>1order/mag
C. Small Population Size and Decline			
Number of mature individuals	< 250	< 2500	< 10 000
AND either C1 or C2:			
(1) A rapid continuing decline of at least	25% in 3 years or 1 generation	20% in 5 years or 2 generations	10% in 10 years or 3 generation
(2) A continuing decline observed, projected, or inferred at any rate in numbers of mature individuals AND (a) or (b): a) population severely fragmented or b) # of mature individuals in each subpopulation	< 50	< 250	< 1000
D. Very Small or Restricted population			
Either: (1) # of mature individuals	< 50	< 250	< 1000
OR (2) population is susceptible	(not applicable)	(not applicable)	area of occupancy <100km$_2$ or # of locations < 5
E. Quantitative analysis			
Indicating the probability of extinction in the wild to be at least	50% in 10 years or 3 generations	20% in 20 years or 5 generations	10% in 100 years

Annex 2.2 Summary of the IUCN Red List Categories and Criteria version 3.1 (IUCN, 2001)

Use any of the A-E criteria

	Critically Endangered	Endangered	Vulnerable
A. Population Reduction in 10 years or 3 generations at least:			
A1	90%	70%	50%
A2, A3, A4	80%	50%	20%

(1) Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND have ceased, based on and specifying any of the following:
- a) direct observation
- b) an index of abundance appropriate for the taxon
- c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
- d) actual or potential levels of exploitation
- e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites

(2) Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction may NOT have ceased OR may not be understood OR may not be reversible, based on (a) and (e) under (1)

(3) Population reduction projected or suspected to be met in the future (up to amaximum of 100 years) based on (b) to (e)under (1)

(4) Population reduction observed, estimated, inferred, projected or suspected (up to a maximum of 100 years) where the time period must include both the past and the future, and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible, based on (a) and (e) under (1)

B. Geographic range in the form of either B1 (extent or occurrence) AND/OR B2 (area or occupancy)			
B1 Extent of occurrence	<100km^2	<5000km^2	<20 000km^2
B2 Area of occupancy	<10km^2	<500km^2	<2000km^2

AND at least 2 of the following:

(a) Severely fragmented, OR: # of locations = 1<5 < 10

(b) Continuing decline in any of the following:

(B continued)	**Critically Endangered**	**Endangered**	**Vulnerable**
i) extent of occurrence			
ii) area of occupancy			
iii) area, extent and/or quality of habitat			
iv) number of locations or subpopulations			
v) number of mature individuals			
(c) Extreme fluctuations in any of:			
i) extent of occurrence			
ii) area of occupancy			
iii) number of locations or subpopulations			
iv) number of mature individuals			
C. Small Population Size and Decline			
Number of mature individuals	< 250	< 2500	< 10 000
AND either C1 or C2:			
(1) An estimated continuing decline of at least:			
(up to a maximum of 100 years)	25% in 3 years or 1 generation	20% in 5 years or 2 generations	10% in 10 years or 3 generation
(2) A continuing decline AND (a) and/or (b):			
(a) i) # of mature individuals in each subpopulation:	< 50	< 250	< 1000
(a) ii) OR % individuals in one subpopulation at least	90%	95%	100%
(b) extreme fluctuations in the # of mature individuals			
D. Very Small or Restricted population			
Either:			
(1) # of mature individuals	< 50	< 250	< 1000
AND/ OR			
(2) Restricted area of occupancy	(not applicable)	(not applicable)	area of occupancy < 20 km^2 or # of locations < 5
E. Quantitative analysis			
Indicating the probability of extinction in the wild to be at least	50% in 10 years or 3 generations (100 years max)	20% in 20 years or 5 generations (100 years max)	10% in 100 years

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www.iucn.org/themes/ssc/our_work/wildlife_trade/citescop14/cop14analyses.htm

Summaries of the IUCN/TRAFFIC Analyses of the Proposals to Amend the CITES Appendices at the 14th Meeting of the Conference of the Parties
www.iucn.org/themes/ssc/our_work/wildlife_trade/citescop14/cop14analyses.htm

TRAFFIC Recommendations on the Proposals to Amend the CITES Appendices at the 14th Meeting of the Conference of the Parties
www.traffic.org/cop14/recommendations.htm

IUCN - The World Conservation Union, is a global partnership of sovereign states, government agencies and non-governmental organisations. Its seeks to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. Website: www.iucn.org

The Species Survival Commission (SSC) is the largest of IUCN's six volunteer commissions with a global membership of 7000 experts. As the world's largest source of species conservation information, SSC advises IUCN and its members on the technical and scientific aspects of species conservation and is dedicated to securing a future for biodiversity. Website: www.iucn.org/themes/ssc

TRAFFIC, the wildlife trade monitoring network, works to ensure that wildlife trade is not a threat to the conservation of nature. TRAFFIC a joint programme of IUCN - The World Conservation Union and WWF, the world conservation organization. Website: www.traffic.org