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TITLE PAGE

Molecular identification of seahorse and pipefish species sold as dried seafood in China: a market-based survey to highlight the actual needs for a proper trade

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Abstract

In this study, COI and 16S rRNA genes were used to molecularly identify dried seahorse and pipefish sold on the Chinese market. One hundred and ninety-eight products, including 168 seahorse and 30 pipefish, were collected from dried seafood sellers in Zhanjiang (Guangdong province, China) and analyzed. Overall, the study identified 5 different species: *Hippocampus trimaculatus*, *H. spinosissimus* and *H. kelloggi* in seahorse products and *Solegnathus hardwickii* and *S. spinosissimus* in pipefish products. All the aforesaid species were randomly sold under the generic umbrella term of *Hai ma* (海马) (seahorse) and of *Hai long* (海龙) (pipefish) irrespectively of the price. The present study supports the main pathways of seahorse and pipefish exploitation already described in the literature and confirms previous concerns about the impact that illegal and not regulated trade could have on syngnathids. In particular, the huge economic value of dried products seems to represent the strongest incentive to fishing despite the presence of a legislative framework aimed at managing the wild population of seahorse and pipefish. A proper description on the label, comprising at least the scientific denomination and a "recognizable" Chinese commercial name, is needed to avoid deception of consumers and bypassing of official controls.

Keywords: Syngnathids; dried seafood; Traditional Chinese Medicine; specie identification; labelling

1. Introduction

The family Syngnathidae comprises 300 water species of seahorses, pipefishes, seadragon, pipehorses, pygmy pipehorses, and flag-tail pipefishes. This family is the only vertebrate taxa in which the embryonic development occurs within a special pouch in males (http://www.fishbase.org/Summary/FamilySummary.php?ID=258; Lin et al., 2016; Teske et al., 2004). Beside their reproductive behaviour, syngnathids are well known also for their peculiar morphology characterized by an elongated snout and a prehensile tail (Lin et al., 2016).

Seahorses and pipefish are mainly exploited as ingredients of the Traditional Chinese Medicine (TCM) and to a lesser extent as aquarium fishes (Koldewey & Martin-Smith, 2010). As ingredients of TCM seahorses are used to balance vital energy and are known as “animal ginseng”. Other than treating erectile dysfunction, seahorses seem to a have a curative role for different ailments. According to the scientific literature, they also exhibit antitumor and antiaging properties (Kumaravel et al., 2012; Chen et al., 2015). As regards pipefish, other than being used for invigorating kidney-yang (The State Committee of Pharmacopoeia, 2010), Wijesekara et al. (2011) suggested that they could be used for producing functional foods against hypertension.

Seahorse species generally used in TCM are *Hippocampus histrix*, *Hippocampus kelloggi*, *Hippocampus kuda*, *Hippocampus spinosissimus*, *Hippocampus trimaculatus* and *Hippocampus mohnikei* (Sreepada et al., 2002; Lourie et al., 2004; Chen et al., 2015). As regards pipefish the most commonly used species are

Solenognathus hardwickii, *Syngnathoides biaculeatus*and *Syngnathus acus* (Pharmacopeia of People's Republic of China, 2015).

TCM account for the largest consumption of seahorses, with the global trade exceeding 20 million dried seahorses a year (Foster & Vincent 2005). Dried seahorses are imported from Vietnam, Thailand, the Philippines, and Malaysia into China (Lu et al. 2002) and mainly consumed not only in China but also in Hong Kong, and Taiwan (Vincent et al., 2011). Dried seahorses and pipefish can be purchased not only in TCM markets (Chang et al., 2013; Hou et al., 2018) but also at dried seafood markets that are very common in China.

Even though the analysis of trade data regarding dried seahorse is quite challenging, official documents show that Taiwan has imported an appreciable number of desiccated seahorses, in the range of 3181-8797 kg each year, during 2008 and 2011 (Bureau of Foreign Trade, Ministry of Economic Affairs, 2012). A recent study (Lawson et al., 2017) estimated that 37 million of seahorses were caught as by-catch every year, with Southeast Asia and West Africa being the main exporting regions. However, at least 50 regions around the world have been involved in seahorses trade (Job et al. 2002). In fact, even though by-catch is the principal method of seahorse capture (Perry et al., 2010), economic gains have determined an increase in targeted fishing methods in many developing nations such as Brazil, India, Indonesia, Malaysia, Mexico, Philippines, Thailand and Vietnam (Koldewey & Martin-Smith, 2010; Vincent et al., 2011).

The increased extraction of seahorse and pipefish from the marine environments has had a drastic effect on many aspects of their ecosystem and biology because capture has the potential to affect wild populations by displacing individuals, devasting habitats and disrupting monogamous pair (Lawson et al., 2017). Concerns over unsustainable levels of exploitation led CITES to add all seahorse species to Appendix II in November 2002. It means that all the species of seahorse must be traded accompanied with permits and that their exploitation be determined not detrimental to the wild populations. This regulation has been subsequently implemented starting from 2004. In China, the first legislation for wildlife conservation – China Wildlife Protection Law (CWPL) – was promulgated in November 1988 and enforced on 1 March 1989. A state protection list (SPL) was included in the CWPL. The two annexes entitled 'Animals under State's Special Protection (ASSP)' include 96 species (Appendix I, also called Category I, endemic or endangered species to China) and 161 species (Appendix II, also called Category II, vulnerable species to China). The CWPL 'prohibits hunting, selling, purchasing and transporting ASSP and their products', and states that 'anyone who wishing to catch, tame, sell, transport, import or export ASSP or its products due to a special reason must have a permit issued by the state or provinces' (Li et al., 2000). Initially, only the great seahorse *H. kelloggi* was listed within Category II in 1989. Starting from 2018, all *Hippocampus* spp. have been listed in the same Category (Ministry of Agriculture and Rural Affairs of the People's Republic of China, 2018,

http://www.moa.gov.cn/govpublic/YYJ/201810/t20181015_6160721.htm). Currently, a similar legislative framework does not exist for pipefish.

The reduction of natural resources together with a strict regulation limiting the collection of wild specimens have led TCM market to look for alternate products to face the demand (Koldewey & Martin-Smith, 2010). Products coming from aquaculture could therefore represent a valid alternative with the potential in achieving both conservation and sustainable development goals. However, though TCM community is open to the possibility of using farmed animals, their believed lower potency compared to the wild-caught specimens (Moreau et al., 2000) could boost illegal trades and smuggling. In addition, the high prices of dried seahorse and pipefish (Martin-Smith & Vincent, 2006; Gao et al., 2018) as well as their strong market demand could facilitatespecies substitution. In addition, even samples from a single species may have a diversity of appearances after processing, making morphological identification difficult. Finally, species substitution could be further boosted by the weaknesses characterizing the Chinese system of seafood traceability and labelling (Xiong et al, 2016a and 2016b).

Analytical methods based on DNA sequencing represent reliable approaches for species identification along the seafood value chain (Carvalho et al., 2015; Galal-Khallaf et al., 2016; Guardone et al., 2017) since DNA can be recovered also from processed seafood products such as dried (Wen et al, 2015, 2017 and 2018), salted (Armani et al., 2014) and even canned (Giusti et al, 2019) products.

Previous studies dealing with the molecular identification of dried seahorse sold in TCM markets in Taiwan and mainland China depicted an unregulated trading and marketing of vulnerable and endangered species (Chang et al., 2013; Hou et al., 2018). However, a low number of samples have been analyzed. Even though a recent study (Kuo and Vincent, 2018), highlighted a significantly decreased in total weight of seahorse trade after CITES implementation, this study aimed at conducting a wider survey to molecularly identified the seahorse species sold in traditional dried seafood markets. In addition to seahorses, pipefish were collected and analyzed for the first time. By providing a further insight into the dried seafood markets in China this market-based survey allows to highlight the actual needs for a proper management of seahorse and pipefish trade and consumers' protection.

2. Materials and Methods

2.1 Samples collection

A total of 198 dried products were purchased from five dried seafood shops of Zhanjiang, Guangdong province, China. The seahorse products were sold as *Hai ma* (海马) (168 products) while the pipefish products as *Hai long* (海龙) (30 products) without any reference to a particular species. The sampling was conducted to include a proportional number of products per type, according to the dried seafood market availability. Selections of the samples collected in this study are shown in Fig. 1 and 2. The price of the collected products was also registered (Table 1).

153 *2.2 Total DNA extraction and PCR amplification*

154 Total DNA extraction was performed starting from 30 mg of tissue samples
155 using the TIANamp Marine Animals DNA Kit (TIANGEN, China) according to the
156 manufacturer's instructions. A blank control was used during DNA extractions. The
157 qualities and quantities of the DNA from each sample were determined with a U-1800
158 spectrophotometer (Hitachi, Japan). The COI gene was used as the elective marker
159 and the PCR amplification was performed using the universal pair of primers (FishF1:
160 5'TCAACCAACCACAAAGACATTGGCAC3' and FishR1:
161 5'TAGACTTCTGGGTGGCCAAAGAATCA3') (Ward et al., 2005) to obtain an
162 expected amplicon of about 655 bp long. The *16S rRNA* gene was used as alternative
163 molecular target for DNA samples that failed *COI* amplification and sequencing. In
164 this case the universal pair of primers (16Sar: 5'CGCCTGTTTATCAAAAACAT3'
165 and 16Sbr: 5'CCGGTCTGAACTCAGATCACGT3') (Palumbi et al., 1991) was used
166 for obtaining an expected PCR amplicon of about 570 bp. PCR amplification were
167 performed using 100 ng of template DNA and 50 μL master mix containing 2 μL each
168 primer (10 μmol/L), 5 μL of 10× Ex *Taq* buffer (20 mmol/L Mg^{2+} plus), 4 μL dNTP
169 mixture (2.5 mmol/L each, TaKaRa, Japan), and 0.25 μL Ex *Taq* DNA polymerase (2
170 U/μL) (TaKaRa, Japan). PCR amplifications were carried out in a C1000 touch
171 thermal cycler (Bio-Rad, USA). Amplification conditions for the COI gene were a
172 denaturing step at 94 °C for 3 min, 30 cycles of 42 s at 94 °C for denaturation, 30 s at
173 48 °C for annealing and 50 s at 72 °C for extension, and a final extension at 72 °C for
174 10 min. Amplification conditions for the 16S rRNA gene were a denaturing step at 95

°C for 2 min, 35 cycles of 30 s at 94 °C for denaturation, 40 s at 48 °C for annealing and 1 min at 72 °C for extension, and a final extension at 72 °C for 10 min. A non-template control was used for PCR. The PCR were analyzed by 1.2% agarose gel (11.5 x 6 cm) electrophoresis at 160 V for 30 min. The lengths of fragments were determined by comparison with the DL2000 DNA ladder (TaKaRa, Japan).

2.3. DNA sequencing and molecular identification

PCR products were purified with the AxyPrep™ DNA Gel Extraction Kit (Axygen, USA), then sequenced in both directions with the Applied Biosystems 3730 Automatic Sequencer. The sequences were analyzed with the Chromas lite v2.23 software and aligned using Editseq software (DNASTAR Lasergene Version 7.1.0) and Jellyfish v1.4 software. The final sequences (after trimming primer sequences) were submitted to a BLAST analysis on GenBank and analyzed using the Identification System (IDs) on BOLD (Species Level Barcode Records). The highest similarities percentages obtained within the first 100 top match records by BLAST and ID's query were registered. As regards the COI barcode, the specimens were considered identified at species level when the identity showed less than 2% difference with the reference sequences (Barbuto et al., 2010). In the case of 16SrRNA gene the identity score of 100% was used as cut-off for the species identification (Armani et al., 2015).

3. Results and Discussion

197 *3.1. Samples collection*

198 The Chinese seafood sector suffers from great traceability shortcomings. In fact,
199 specific provisions for the labelling of fishery products and an official reference list of
200 seafood trade names are not still available. Therefore, seafood may be sold on the
201 market without any information, such as the commercial and the scientific name.
202 Usually, only generic names referring to a wide number of species are used in China
203 (Xiong et al, 2016a and 2016b). Similarly, all the products collected in this study only
204 reported the name of the taxonomical group: seahorse or pipefish. However, the
205 umbrella term seahorse refers to the genus *Hippocampus* that, according to the most
206 recent taxonomical classification, comprises 45 species (Lourie et al., 2016). The
207 umbrella term pipefish can be used for 17 species belonging to 11 different genera,
208 according to Fishbase
209 (https://www.fishbase.de/ComNames/CommonNameSearchList.php?). Therefore, the
210 identification of the different species available on the market is not straightforward.
211 The only differential characteristic among the products noticed in this study was the
212 price. Generally, accordingly to other authors (Kuo et al., 2018), the price was
213 determined by size, the larger the specimens the more they were expensive. In
214 particular, the price of a dried seahorse ranged from 724.6 to 3,695.7 US dollar per
215 kg, and the price of a dried pipefish ranged from 1,956.5 to 2,608.7 US dollar per kg
216 (Table 1). Overall, data from this study confirmed the high prices associated to these
217 products reported in previous studies (Sreepada et al. 2002; Martin-Smith & Vincent,
218 2006) and the fact that pipefish (*Syngnathus schlegeli*) are among the most expensive

219 materials in the TCM (Khan et al., 2009; Gao et al., 2018). However, pipefish
220 belonging to different species are characterized by different properties and prices
221 (Gao et al., 2018).
222
223 *3.2 Total DNA extraction, amplification and sequencing*
224 Although the products collected in this study had undergone manufacturing
225 processes, such as drying, and were stored at room temperature, our results confirmed
226 a good quality of the total extracted DNA, that allowed a successful amplification
227 from all the 198 specimens analysed. In particular, the *COI* gene was successfully
228 amplified from 161 samples (137 seahorse and 24 pipefish) while the 16S rRNA gene
229 from 37 DNA samples (31 seahorse and 6 pipefish). PCR products were then all
230 successfully sequenced. Similarly, Hou et al. (2018) reported that *COI* sequences
231 amplification was achieved from all the dried seahorse samples collected and Chang
232 et al. (2013) reported that only 1 out of the 58 dried seahorse samples analyzed failed
233 the PCR amplification of the entire cytochrome b gene (about 1141 bp). As regards
234 the *COI* gene, all the obtained sequences did not contain insertions, deletions,
235 non-sense, or stop codons; therefore, PCR or sequencing errors, the sequencing of
236 pseudogenes or of *COI* of symbiotic organisms were excluded. All the *COI* sequences
237 length were 655 bp, corresponding to 100% of the expected amplicons. Interpretable
238 sequences were obtained for 100% (161/161) of the PCR products. Similarly, all the
239 16S rRNA sequences were of the expected length (ranged from 567 to 578 bp due to
240 the presence of specie-specific insertion and deletions).

241

242 *3.3 Molecular identification*

243 In the present study, two databases (BOLD and Genbank) were simultaneously
244 used for the genetic identification of seahorse and pipefish species. Overall, by the
245 combination of BOLD ID's and BLAST analysis, all 198 samples (100%) were
246 unequivocally allocated to species level (Table 1). One hundred and sixty-one of them
247 were effectively identified at species level using the *COI* barcode alone, the remaining
248 37 samples by the analysis of the *16S rRNA* alternative target alone. Results of the
249 comparison of *COI* gene sequences obtained in this study with BOLD databases show
250 that each species exhibited high values of intraspecific homology, 99.7-100% among
251 seahorse species and 99.8-100% among pipefish species, respectively. These high
252 values of intraspecific homology were confirmed also by the comparison of *COI* gene
253 sequences with GeneBank: 99.7-100% among seahorse species and 99.0-100%
254 among pipefish species, respectively. Intraspecific homology value comprises
255 between 99.5-100% among seahorse species and between 99.8-100% among pipefish
256 species, respectively were obtained after the BLAST analysis of the *16S rRNA* gene
257 sequences. Overall, the results of the sequences comparison with databases confirm
258 the high discriminating power of the mitochondrial *COI* gene fragment but also
259 highlight the utility of the 16S rRNA gene sequences as alternative marker (Armani et
260 al., 2015).

261 *3.3.1. Seahorse species identified in dried products*

All 168 seahorse products were unambiguously identified as belonging to the following three different species: *Hippocampus trimaculatus* (Three-spot seahorse, n= 90, 53.6%), *Hippocampus spinosissimus* (Hedgehog seahorse, n= 54, 32.1%) and *Hippocampus kelloggi* (Great seahorse, n= 24, 14.3%) (Table 1).

H. trimaculatus, has a wide distribution range throughout the tropical and sub-tropical regions in Southeast Asia (Zhang et al., 2014; Lourie et al., 2016). *H. spinosissimus* is distributed worldwide: it is present in Australia (north), Cambodia, India, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Sri Lanka, Taiwan Province of China, Thailand and Viet Nam (Lourie et al., 2016). *H. kelloggi*, is one of the largest seahorse tropical species especially present in the Indo-Pacific region with a distribution documented from the east coast of Africa, across to Japan, and south to northern Australia (Lourie et al., 2016; Harasti, 2017).

The 3 species identified, together with *Hippocampus kuda*, are those heavily fished and traded in the Indo-Pacific Ocean region (Martin-Smith & Vincent, 2006). In particular, these species are among the 7 historically described in China (*H. kuda*, *H. trimaculatus*, *H. kelloggi*, *H. spinosissimus*, *H. histrix*, *H. comes* and *H. japonicus*) (Lin et al., 2006; Woods, 2000). However, a recent molecular investigation along China's coast also detected *H. mohnikei*, *H. barbouri*, *H. casscsio* and *H. ingens* (Zhang et al., 2017). *H. japonicus* is less important than the other species for the Chinese traditional medicine because of its small body size and rarity. In fact, it is mainly present in northern China while the other species are distributed in Hainan, Guangdong and Fujian Provinces of China (Lin et al., 2006; Woods, 2000).

By comparing the results of our study with those arising from previous molecular survey conducted on similar products we noticed similarities with those of Chang et al. (2013) that conducted a survey in the Taiwan TCM market collecting dried seahorse from 23 Chinese herbal medicine stores. In fact, they found that *H. trimaculatus* was the most common species, representing 73.9% of samples, followed by *H. spinosissimus* identified in 13.8% of the analyzed samples. *H. trimaculatus* was also the most common species in the work conducted by Wen et al. (2013), accounting for 26.37% of the dried seahorse analysed. On the contrary, *H. trimaculatus* was the rarest species (only 1 out of the 27 samples) and *H. spinosissimus* was not detected among products collected in Sichuan TCM market (Hou et al., 2018). Our results differ from the previous studies as regards the relatively low number of seahorse species identified: in fact, 8 and 9 different species were detected by Chang et al. (2013) and Hou et al., 2018, respectively. As regards *H. kelloggi*, even if it is reported to have a great economic value in both traditional medicine and aquarium trades (Lourie et al., 2016; Harasti, 2017), it was detected in low percentage also in previous studies: 5.2% (Chang et al., 2013), 3.99% (Wen et al., 2013) and 11.1% (Hou et al., 2018).

As regards studies conducted out of China, our results are also in agreement with the survey of Murgan et al. (2011) in the Gulf of Mannar region (Southeast coast of India). In fact, by analysing the data resulting from the seahorse species caught as by-catch during shrimp trawling, we found that *H. trimaculatus* was the dominant species, followed by *H. kuda* and *H. spinosissimus*. This species is in fact highly

306 valued not only for TCM but also for aquarium trades: it is one of the heavily traded
307 seahorse species contributing to about 35% of the total seahorse trade for TCM from
308 Southeast Asia (Murugan et al., 2009). Similarly, *H. spinosissimus* and *H.*
309 *trimaculatus* were the species most exploited in the dried seahorse trade also in a
310 survey conducted in different fishing sites along the east coast of the Gulf of Thailand
311 (Laksanawimol et al., 2013). Interestingly, Thailand was the country most implicated
312 in the international trade in seahorse specimens after 2004 (year of CITES listing and
313 implementation) (Kuo and Vincent, 2018).

314 In particular, in Thailand an organised system of traders that collect dried
315 seahorses from the fishing villages and convey them to the final destination (in
316 general Asian countries such as China, Taiwan, and Hong Kong) exists
317 (Laksanawimol et al., 2013; Kuo and Vincent, 2018). The presence of an "informal
318 supply chain", together with the presence of mixed fisheries with similar species, and
319 with the different selling prices of the species, have been advocated as a possible
320 cause of species substitution and mislabelling in the seafood sector (Donlan and
321 Luque, 2019). Therefore, outcomes from this study, which were supported by a higher
322 sampling size respect to that of the above cited studies, seemed to confirm the same
323 pattern of seahorse exploitation. Finally, it showed that all the species sold under the
324 umbrella term of *Hai ma* (海马) were factually different species of seahorses
325 randomly sold irrespective of the price. Both *H. trimaculatus* (75%, 18/24) and *H.*
326 *spinosissimus* (25%, 6/24) were in fact detected among the 24 products priced 724.6
327 US dollar per kg. Similarly, both *H. spinosissimus* (66.7%, 24/36) and *H. kelloggi*

328 (33.3%, 12/36) were detected among the 36 products priced 1304.3 US dollar per kg
329 (Table 1).

330 Seahorse is the first marine fish for which global trade was banned and currently
331 is included among threatened species in regional, national or local legislations and at
332 least 15 countries managed these species as endangered (Vincent et al., 2011). For
333 example, Mexico, South Africa, France, Portugal, Slovenia, Malaysia, and India have
334 presently included seahorses in the list of protected species (Lourie et al. 2004).
335 Following CITES bans as regards the exploitation of some seahorse species directed
336 to Vietnam and Africa, also Thailand in 2016 voluntarily decided to suspend its own
337 exports with the aim to do not damage wild populations. All these efforts provoked a
338 significative reduction of seahorse global trade and the reduction of the number of
339 countries implicated in seahorse trade: from a mean of 13 countries in each year
340 during the pre-CITES period to 5 in the post- CITES period and from a mean of 6
341 countries in each year during the pre-CITES period to 2 in the post- CITES period for
342 Hong Kong and Taiwan, respectively (Kuo and Vincent, 2018). However, as in the
343 case of Vietnam, some concerns arising by the analysis of trade volume data
344 extrapolated from official CITES documents and those coming from other sources
345 (Stocks, Foster, Bat, & Vincent, 2017). In addition, the import prices of seahorses
346 rose with declines in declared trade volume, providing incentives for illegal pathways
347 (Kuo and Vincent, 2018). In fact, the huge economic value of dried seahorses
348 represents a strong incentive for fishers to continue fishing even if their target species
349 are overexploited (Kuo et al., 2018).

Unfortunately, all these species were found in this and previous studies depicting an alarming scenario in which endangered species are still traded even in absence of any kind of specific information reported on the labelling that could in some way regulated the trading. In fact, often the same operators are not aware of the species they are selling (authors' note). In particular, concerns arises from this study considering that all the three species detected in this study are currently listed as Vulnerable in the IUCN Red List of Threatened Species and has been regulated for international trade by Appendix II of CITES and *H. trimaculatus* has been in fact included in the Guangdong province (including Zhanjiang) list of wildlife protection starting from 2001 (http://gd.zwbk.org/lemma-show-3042.shtml).

3.3.2 Pipefish species identified in dried products

Pipefish products were unambiguously identified as belonging to the following two different species: *Solegnathus hardwickii* (Hardwicke's pipefish, n= 24, 80%) and *Solegnathus spinosissimus* (Spiny pipehorse, n= 6, 20%) (Table 1). *S. hardwickii* is a species endemic to Australia and is among the largest species of syngnathids in the world. For this reason, is particularly valuable in the TCM and can reach very high prices on the market (Connolly et al., 2011). *S. spinosissimus* is a closely related species mainly distributed in Southwest Pacific Ocean (southern Australia and New Zealand) (Edgar, 1997). However, despite their economic importance, there is a lack of information on the biology and ecology of *Solegnathus* species (Courtney et al., 2007).

As previously mentioned, to the best of our knowledge this is the first molecular investigation aimed at identifying pipefish sold as dried seafood. Therefore, with the aim of interpreting our results, we took into consideration the results of a survey conducted in Australia in 2006 aimed at assessing which syngnathids species were most exploited in commercial trades (Martin-Smith & Vincent, 2006). It interesting to note that the species of pipefish identified in the present study were also found among those usually sold as TCM in ethnic Chinese shops and those exported from Australia to mainland China, Hong Kong or Taiwan. In addition, results from the study of Martin-Smith & Vincent (2006) seem to confirm the different value of the species identified in this study. In general, the species belonging to the *Solegnathus* genus are highly appreciated by the Asian medicine especially in Chinese traditional medicine (Courtney et al., 2007) and *S. hardwickii* is among the most important species used for medical formulation (Pharmacopeia of People's Republic of China, 2015). Even though a reduction of pipehorse catches in Queensland (Australia) and exportation towards Asian market were observed by Connolly et al. (2001), it seems that some species are always exploited for this purpose. In fact, even though no data are available as regard the *S. spinosissimus,* this species is mainly distributed in Southwest Pacific Ocean (southern Australia and New Zealand). Finally, since *S. hardwickii* has a composition similar to *Hippocampus* spp. it could represent an alternative for the preparation of TCM compounds (Chen et al., 2015). Both species are currently listed as Data Deficient in the IUCN Red List of Threatened Species and has Not been Evaluated by CITES. *S. hardwickii* (the species of pipefish most

393 frequently encountered on the market) has been included in the Guangdong province
394 (including Zhanjiang) list of wildlife protection starting from 2001
395 (http://gd.zwbk.org/lemma-show-3042.shtml). However, also for this species some
396 concerns arise in the light of the results of our studies.
397

398 **Conclusion**

399 In the present study dried seahorse and, for the first time also pipefish, sold in
400 Chinese dried seafood market were molecularly identified by using the *COI* and *16S*
401 *rRNA*. Outcomes from this study highlighted the presence of 5 different species in the
402 collected products: 3 seahorse species *H. trimaculatus H. spinosissimus, H. kelloggi*
403 and 2 pipefish species *S. hardwickii* and *S. spinosissimus.* Overall this study supports
404 the main pathwaysof seahorse and pipefish exploitation described by the available
405 literatures and highlight how their high price it is responsible of their involvement in
406 unofficial trade. This study therefore confirms previous concerns about the impact
407 that illegal and not regulated trade could have on syngnathids population. In fact, the
408 presence of different species mixed together and generally sold as *Hai ma* (海马) and
409 *Hai long* (海龙) make difficult monitoring seahorse and pipefish catch and trade.
410 Therefore, in the absence of a proper description, comprising at least the scientific
411 denomination and a “recognizable” Chinese commercial name, along all the supply
412 chain, consumers could be easily deceived and official controls bypassed.
413

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577 Figure Captions

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580 **Fig. 1.** Some dried seahorse products (*Hai ma* - 海马) collected in this study. Bar = 2

581 cm.

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585 **Fig. 2.** Some dried pipefish products (*Hai long* - 海龙) collected in this study. Bar =

586 2 cm.

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Fig. 1. Some dried seahorse products (*Hai ma* - 海马) collected in this study. Bar = 2 cm.

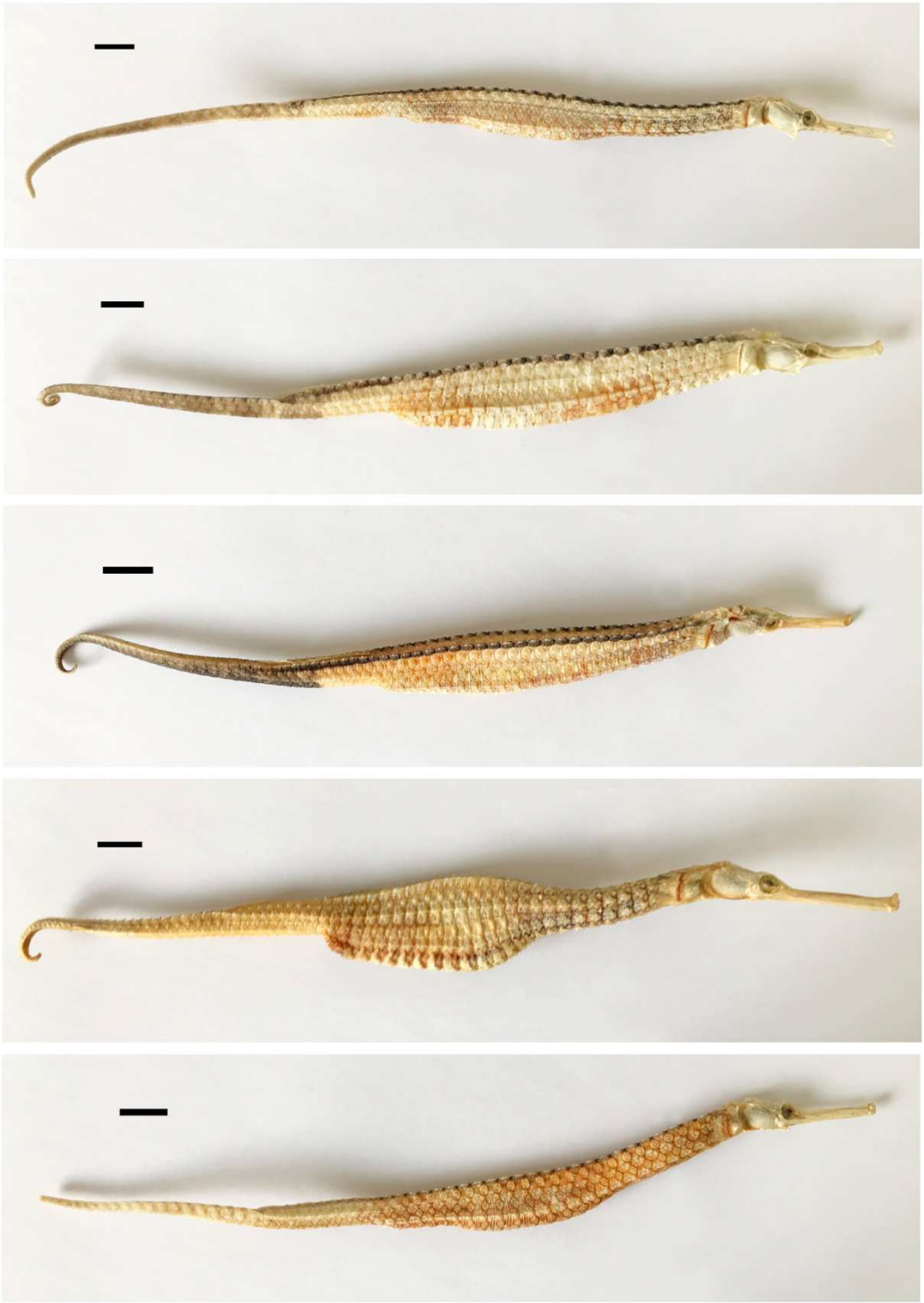

Fig. 2. Some dried pipefish products (*Hai long* - 海龙) collected in this study. Bar = 2 cm.

612 **Tables**

613 **Table 1** Commercial seahorse and pipefish samples analyzed in this study (n = 198).

Product labeled	**Price (US$ kg^{-1})**	**Sample code based on the price**	**COI (bp)**	**(N of sequences obtained)**	**Blast analysis**	**Bold analysis**	**16S rRNA (bp)**	**(N of sequences obtained)**	**Blast analysis**	**Species identified: scientific and common name**
Seahorse (海马)	724.6	S1-S6, S10-S12, S15-S17, S19-S24	655	16	99.7-100%	99.7-100%	572	2	100%	*Hippocampus trimaculatus* Three-spot seahorse
	724.6	S7-S9, S13, S14, S18	655	4	99.7-100%	99.7-100%	578	2	99.7-100%	*Hippocampus spinosissimus* Hedgehog seahorse
	1014.5	S25-S36	655	8	99.7-100%	99.7-100%	572	4	100%	*Hippocampus trimaculatus* Three-spot seahorse
	1202.9	S37-S72	655	30	99.7-100%	99.7-100%	572	6	100%	*Hippocampus trimaculatus* Three-spot seahorse
	1304.3	S73-S83, S89-S92, S94-S99, S106-S108	655	21	99.7-100%	99.7-100%	578	3	99.7-100%	*Hippocampus spinosissimus* Hedgehog seahorse
	1304.3	S84-S88, S93,	655	9	100%	100%	578	3	99.5-100%	*Hippocampus kelloggi* Great seahorse

		S100-S105								
	1376.9	S109-S132	655	19	99.7-100%	99.7-100%	578	5	99.7-100%	*Hippocampus spinosissimus* Hedgehog seahorse
	1739.1	S133-S156	655	21	99.7-100%	99.7-100%	572	3	100%	*Hippocampus trimaculatus* Three-spot seahorse
	3695.7	S157-S168	655	9	100%	100%	578	3	99.5-100%	*Hippocampus kelloggi* Great seahorse
Pipefish (海龙)	1956.5	S169-S174	655	5	99.8-100%	99.8-100%	567	1	99.8-100%	*Solegnathus hardwickii* Hardwicke's pipefish
	2101.4	S175-S180	655	5	99.0%	100%	569	1	100%	*Solegnathus spinosissimus* Spiny pipehorse
	2173.9	S181-S186	655	4	99.8-100%	99.8-100%	567	2	99.8-100%	*Solegnathus hardwickii* Hardwicke's pipefish
	2318.8	S187-S192	655	5	99.8-100%	99.8-100%	567	1	99.8-100%	*Solegnathus hardwickii* Hardwicke's pipefish
	2608.7	S193-S198	655	5	99.8-100%	99.8-100%	567	1	99.8-100%	*Solegnathus hardwickii* Hardwicke's pipefish

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Research Highlights

Identification of dried seahorse and pipefish products has been carried out.

The 168 seahorse and 30 pipefish products were identified from five species.

Fishing of seahorse despites the presence of a legislative framework.

Appendices I, II and III

valid from 4 October 2017

Interpretation

1. Species included in these Appendices are referred to:

   a) by the name of the species; or
   b) as being all of the species included in a higher taxon or designated part thereof.

2. The abbreviation “spp.” is used to denote all species of a higher taxon.

3. Other references to taxa higher than species are for the purposes of information or classification only. The common names included after the scientific names of families are for reference only. They are intended to indicate the species within the family concerned that are included in the Appendices. In most cases this is not all of the species within the family.

4. The following abbreviations are used for plant taxa below the level of species:

   a) “ssp.” is used to denote subspecies; and
   b) “var(s).” is used to denote variety (varieties).

5. As none of the species or higher taxa of FLORA included in Appendix I is annotated to the effect that its hybrids shall be treated in accordance with the provisions of Article III of the Convention, this means that artificially propagated hybrids produced from one or more of these species or taxa may be traded with a certificate of artificial propagation, and that seeds and pollen (including pollinia), cut flowers, seedling or tissue cultures obtained *in vitro*, in solid or liquid media, transported in sterile containers of these hybrids are not subject to the provisions of the Convention.

6. The names of the countries in parentheses placed against the names of species in Appendix III are those of the Parties submitting these species for inclusion in this Appendix.

7. When a species is included in one of the Appendices, all parts and derivatives of the species are also included in the same Appendix unless the species is annotated to indicate that only specific parts and derivatives are included. The symbol # followed by a number placed against the name of a species or higher taxon included in Appendix II or III refers to a footnote that indicates the parts or derivatives of plants that are designated as 'specimens' subject to the provisions of the Convention in accordance with Article I, paragraph (b), subparagraph (iii).

8. The terms and expressions below, used in annotations in these Appendices, are defined as follows:

   Extract

   Any substance obtained directly from plant material by physical or chemical means regardless of the manufacturing process. An extract may be solid (e.g. crystals, resin, fine or coarse particles), semi-solid (e.g. gums, waxes) or liquid (e.g. solutions, tinctures, oil and essential oils).

   Finished products packaged and ready for retail trade

   Products, shipped singly or in bulk, requiring no further processing, packaged, labelled for final use or the retail trade in a state fit for being sold to or used by the general public.

   Powder

   A dry, solid substance in the form of fine or coarse particles.

   Woodchips

   Wood that has been reduced to small pieces.

	Appendices I	II	III
FAUNA (ANIMALS) **PHYLUM CHORDATA** **CLASS MAMMALIA (MAMMALS)**			
ARTIODACTYLA			
Antilocapridae Pronghorns			
	Antilocapra americana (Only the population of Mexico; no other population is included in the Appendices)		
Bovidae Antelopes, cattle, duikers, gazelles, goats, sheep, etc.			
	Addax nasomaculatus	***Ammotragus lervia***	***Antilope cervicapra*** (Nepal, Pakistan)
	Bos gaurus (Excludes the domesticated form, which is referenced as *Bos frontalis*, and is not subject to the provisions of the Convention)		
	Bos mutus (Excludes the domesticated form, which is referenced as *Bos grunniens*, and is not subject to the provisions of the Convention)		
	Bos sauveli		***Boselaphus tragocamelus*** (Pakistan)
			Bubalus arnee (Excludes the domesticated form, which is referenced as *Bubalus bubalis* and is not subject to the provisions of the Convention) (Nepal)
	Bubalus depressicornis		
	Bubalus mindorensis		
	Bubalus quarlesi		
		Budorcas taxicolor	
		Capra caucasica	
	Capra falconeri		

	Appendices		
	I	**II**	**III**
			Capra hircus aegagrus (Specimens of the domesticated form are not subject to the provisions of the Convention) (Pakistan)
			Capra sibirica (Pakistan)
	Capricornis milneedwardsii		
	Capricornis rubidus		
	Capricornis sumatraensis		
	Capricornis thar		
		Cephalophus brookei	
		Cephalophus dorsalis	
	Cephalophus jentinki		
		Cephalophus ogilbyi	
		Cephalophus silvicultor	
		Cephalophus zebra	
		Damaliscus pygargus pygargus	
			Gazella bennettii (Pakistan)
	Gazella cuvieri		
			Gazella dorcas (Algeria, Tunisia)
	Gazella leptoceros		
	Hippotragus niger variani		
		Kobus leche	
	Naemorhedus baileyi		
	Naemorhedus caudatus		
	Naemorhedus goral		
	Naemorhedus griseus		
	Nanger dama		
	Oryx dammah		
	Oryx leucoryx		
		Ovis ammon (Except the subspecies included in Appendix I)	
	Ovis ammon hodgsonii		
	Ovis ammon nigrimontana		

	Appendices		
	I	II	III
		Ovis aries (Except the subspecies included in Appendix I, the subspecies *O. a. isphahanica, O. a. laristanica, O. a. musimon* and *O. a. orientalis* which are not included in the Appendices, and the domesticated form *Ovis aries aries* which is not subject to the provisions of the Convention)	
	Ovis aries ophion		
	Ovis aries vignei		
		Ovis canadensis (Only the population of Mexico; no other population is included in the Appendices)	
	Pantholops hodgsonii		
		Philantomba monticola	
			Pseudois nayaur (Pakistan)
	Pseudoryx nghetinhensis		
		Rupicapra pyrenaica ornata	
		Saiga borealis	
		Saiga tatarica	
			Tetracerus quadricornis (Nepal)
Camelidae Camels, guanacos, vicunas			
		Lama guanicoe	
	Vicugna vicugna [Except the populations of: Argentina (the populations of the Provinces of Jujuy and Catamarca and the semi-captive populations of the Provinces of Jujuy, Salta, Catamarca, La Rioja and San Juan), Chile (population of the Primera Región), Ecuador (the whole population), Peru (the whole population) and the Plurinational State of Bolivia (the whole population), which are included in Appendix II]		

	Appendices		
	I	II	III
		Vicugna vicugna [Only the populations of Argentina (the populations of the Provinces of Jujuy and Catamarca and the semi-captive populations of the Provinces of Jujuy, Salta, Catamarca, La Rioja and San Juan), Chile (population of the Primera Región), Ecuador (the whole population), Peru (the whole population) and the Plurinational State of Bolivia (the whole population); all other populations are included in Appendix I][1]	
Cervidae Deer, huemuls, muntjacs, pudus			
	Axis calamianensis ***Axis kuhlii***		

[1] For the exclusive purpose of allowing international trade in fibre from vicuñas (*Vicugna vicugna*) and their derivative products, only if the fibre comes from the shearing of live vicuñas. Trade in products derived from the fibre may only take place in accordance with the following provisions:

a) Any person or entity processing vicuña fibre to manufacture cloth and garments must request authorization from the relevant authorities of the country of origin (Countries of origin: The countries where the species occurs, that is, Argentina, Bolivia, Chile, Ecuador and Peru) to use the "vicuña country of origin" wording, mark or logo adopted by the range States of the species that are signatories to the Convention for the Conservation and Management of the Vicuña.

b) Marketed cloth or garments must be marked or identified in accordance with the following provisions:

i) For international trade in cloth made from live-sheared vicuña fibre, whether the cloth was produced within or outside of the range States of the species, the wording, mark or logo must be used so that the country of origin can be identified. The VICUÑA [COUNTRY OF ORIGIN] wording, mark or logo has the format as detailed below:

This wording, mark or logo must appear on the reverse side of the cloth. In addition, the selvages of the cloth must bear the words VICUÑA [COUNTRY OF ORIGIN].

ii) For international trade in garments made from live-sheared vicuña fibre, whether the garments were produced within or outside of the range States of the species, the wording, mark or logo indicated in paragraph b) i) must be used. This wording, mark or logo must appear on a label on the garment itself. If the garments are produced outside of the country of origin, the name of the country where the garment was produced should also be indicated, in addition to the wording, mark or logo referred to in paragraph b) i).

c) For international trade in handicraft products made from live-sheared vicuña fibre produced within the range States of the species, the VICUÑA [COUNTRY OF ORIGIN] - ARTESANÍA wording, mark or logo must be used as detailed below:

d) If live-sheared vicuña fibre from various countries of origin is used for the production of cloth and garments, the wording, mark or logo of each of the countries of origin of the fibre must be indicated, as detailed in paragraphs b) i) and ii).

e) All other specimens shall be deemed to be specimens of species listed in Appendix I and the trade in them shall be regulated accordingly

	Appendices I	Appendices II	Appendices III
	Axis porcinus annamiticus ***Blastocerus dichotomus***	***Cervus elaphus bactrianus***	***Axis porcinus*** (Except the subspecies included in Appendix I) (Pakistan) ***Cervus elaphus barbarus*** (Algeria, Tunisia)
	Cervus elaphus hanglu ***Dama dama mesopotamica*** ***Hippocamelus* spp.**		***Mazama temama cerasina*** (Guatemala)
	Muntiacus crinifrons ***Muntiacus vuquangensis***		***Odocoileus virginianus mayensis*** (Guatemala)
	Ozotoceros bezoarticus	***Pudu mephistophiles***	
	Pudu puda ***Rucervus duvaucelii*** ***Rucervus eldii***		
Hippopotamidae Hippopotamuses			
		Hexaprotodon liberiensis ***Hippopotamus amphibius***	
Moschidae Musk deer			
	***Moschus* spp.** (Only the populations of Afghanistan, Bhutan, India, Myanmar, Nepal and Pakistan; all other populations are included in Appendix II)	***Moschus* spp.** (Except the populations of Afghanistan, Bhutan, India, Myanmar, Nepal and Pakistan, which are included in Appendix I)	
Suidae Babirusa, hogs, pigs			
	Babyrousa babyrussa ***Babyrousa bolabatuensis***		

	Appendices		
	I	II	III
	Babyrousa celebensis ***Babyrousa togeanensis*** ***Sus salvanius***		
Tayassuidae Peccaries			
	Catagonus wagneri	**Tayassuidae spp.** (Except the species included in Appendix I and the populations of *Pecari tajacu* of Mexico and the United States of America, which are not included in the Appendices)	
CARNIVORA			
Ailuridae Red pandas			
	Ailurus fulgens		
Canidae Dogs, foxes, wolves			
	Canis lupus (Only the populations of Bhutan, India, Nepal and Pakistan; all other populations are included in Appendix II. Excludes the domesticated form and the dingo which are referenced as *Canis lupus familiaris* and *Canis lupus dingo*, respectively, which are not subject to the provisions of the Convention)	***Canis lupus*** (Except the populations of Bhutan, India, Nepal and Pakistan, which are included in Appendix I. Excludes the domesticated form and the dingo which are referenced as *Canis lupus familiaris* and *Canis lupus dingo*, respectively, which are not subject to the provisions of the Convention) ***Cerdocyon thous*** ***Chrysocyon brachyurus*** ***Cuon alpinus*** ***Lycalopex culpaeus*** ***Lycalopex fulvipes*** ***Lycalopex griseus***	***Canis aureus*** (India)

	Appendices		
	I	II	III
	Speothos venaticus	***Lycalopex gymnocercus***	***Vulpes bengalensis*** (India)
		Vulpes cana	***Vulpes vulpes griffithi*** (India)
			Vulpes vulpes montana (India)
			Vulpes vulpes pusilla (India)
		Vulpes zerda	
Eupleridae Fossa, falanouc, Malagasy civets			
		Cryptoprocta ferox	
		Eupleres goudotii	
		Fossa fossana	
Felidae Cats			
		Felidae spp. [Except the species included in Appendix I. Excludes specimens of the domesticated form, which are not subject to the provisions of the Convention. For ***Panthera leo*** (African populations): a zero annual export quota is established for specimens of bones, bone pieces, bone products, claws, skeletons, skulls and teeth removed from the wild and traded for commercial purposes. Annual export quotas for trade in bones, bone pieces, bone products, claws, skeletons, skulls and teeth for commercial purposes, derived from captive breeding operations in South Africa, will be established and communicated annually to the CITES Secretariat.]	
	Acinonyx jubatus (Annual export quotas for live specimens and hunting trophies are granted as follows: Botswana: 5; Namibia: 150; Zimbabwe: 50. The trade in such specimens is subject to the provisions of Article III of the Convention)		

	Appendices		
	I	II	III
	Caracal caracal (Only the population of Asia; all other populations are included in Appendix II) ***Catopuma temminckii*** ***Felis nigripes*** ***Leopardus geoffroyi*** ***Leopardus jacobitus*** ***Leopardus pardalis*** ***Leopardus tigrinus*** ***Leopardus wiedii*** ***Lynx pardinus*** ***Neofelis nebulosa*** ***Panthera leo persica*** ***Panthera onca*** ***Panthera pardus*** ***Panthera tigris*** ***Pardofelis marmorata*** ***Prionailurus bengalensis bengalensis*** (Only the populations of Bangladesh, India and Thailand; all other populations are included in Appendix II) ***Prionailurus planiceps*** ***Prionailurus rubiginosus*** (Only the population of India; all other populations are included in Appendix II) ***Puma concolor costaricensis*** ***Puma yagouaroundi*** (Only the populations of Central and North America; all other populations are included in Appendix II) ***Uncia uncia***		
Herpestidae Mongooses			
			Herpestes edwardsi (India, Pakistan) ***Herpestes fuscus*** (India) ***Herpestes javanicus*** (Pakistan) ***Herpestes javanicus auropunctatus*** (India)

	Appendices		
	I	II	III
			Herpestes smithii (India) ***Herpestes urva*** (India) ***Herpestes vitticollis*** (India)
Hyaenidae Aardwolf, hyenas			
			Hyaena hyaena (Pakistan) ***Proteles cristata*** (Botswana)
Mephitidae Skunks			
		Conepatus humboldtii	
Mustelidae Badgers, martens, otters, weasels, etc.			
Lutrinae Otters			
	Aonyx capensis microdon (Only the populations of Cameroon and Nigeria; all other populations are included in Appendix II) ***Enhydra lutris nereis*** ***Lontra felina*** ***Lontra longicaudis*** ***Lontra provocax*** ***Lutra lutra*** ***Lutra nippon*** ***Pteronura brasiliensis***	**Lutrinae spp.** (Except the species included in Appendix I)	
Mustelinae Grisons, honey badgers, martens, tayra, weasels			
			Eira barbara (Honduras) ***Galictis vittata*** (Costa Rica) ***Martes flavigula*** (India) ***Martes foina intermedia*** (India) ***Martes gwatkinsii*** (India) ***Mellivora capensis*** (Botswana) ***Mustela altaica*** (India) ***Mustela erminea ferghanae*** (India) ***Mustela kathiah*** (India)

	Appendices		
	I	II	III
	Mustela nigripes		***Mustela sibirica*** (India)
Odobenidae Walruses			
			Odobenus rosmarus (Canada)
Otariidae Fur seals, sealions			
	Arctocephalus townsendi	***Arctocephalus* spp.** (Except the species included in Appendix I)	
Phocidae Seals			
	***Monachus* spp.**	***Mirounga leonina***	
Procyonidae Coatis, kinkajous, olingos			
			Bassaricyon gabbii (Costa Rica) ***Bassariscus sumichrasti*** (Costa Rica) ***Nasua narica*** (Honduras) ***Nasua nasua solitaria*** (Uruguay) ***Potos flavus*** (Honduras)
Ursidae Bears, giant pandas			
	Ailuropoda melanoleuca ***Helarctos malayanus*** ***Melursus ursinus*** ***Tremarctos ornatus*** ***Ursus arctos*** (Only the populations of Bhutan, China, Mexico and Mongolia; all other populations are included in Appendix II) ***Ursus arctos isabellinus*** ***Ursus thibetanus***	**Ursidae spp.** (Except the species included in Appendix I)	
Viverridae Binturong, civets, linsangs, otter-civet, palm civets			
		Cynogale bennettii	***Arctictis binturong*** (India) ***Civettictis civetta*** (Botswana)

	Appendices		
	I	II	III
	Prionodon pardicolor	***Hemigalus derbyanus*** ***Prionodon linsang***	***Paguma larvata*** (India) ***Paradoxurus hermaphroditus*** (India) ***Paradoxurus jerdoni*** (India) ***Viverra civettina*** (India) ***Viverra zibetha*** (India) ***Viverricula indica*** (India)
CETACEA Dolphins, porpoises, whales			
		CETACEA spp. (Except the species included in Appendix I. A zero annual export quota has been established for live specimens from the Black Sea population of *Tursiops truncatus* removed from the wild and traded for primarily commercial purposes)	
Balaenidae Bowhead whale, right whales			
	Balaena mysticetus ***Eubalaena* spp.**		
Balaenopteridae Fin whales, humpback whales, rorquals			
	Balaenoptera acutorostrata (Except the population of West Greenland, which is included in Appendix II) ***Balaenoptera bonaerensis*** ***Balaenoptera borealis*** ***Balaenoptera edeni*** ***Balaenoptera musculus*** ***Balaenoptera omurai*** ***Balaenoptera physalus*** ***Megaptera novaeangliae***		

	Appendices		
	I	**II**	**III**
Delphinidae Dolphins			
	Orcaella brevirostris ***Orcaella heinsohni*** ***Sotalia* spp.** ***Sousa* spp.**		
Eschrichtiidae Grey whale			
	Eschrichtius robustus		
Iniidae River dolphins			
	Lipotes vexillifer		
Neobalaenidae Pygmy right whale			
	Caperea marginata		
Phocoenidae Porpoises			
	Neophocaena asiaeorientalis ***Neophocaena phocaenoides*** ***Phocoena sinus***		
Physeteridae Sperm whales			
	Physeter macrocephalus		
Platanistidae River dolphins			
	***Platanista* spp.**		
Ziphiidae Beaked whales, bottle-nosed whales			
	***Berardius* spp.** ***Hyperoodon* spp.**		
CHIROPTERA			
Phyllostomidae Broad-nosed bats			
			Platyrrhinus lineatus (Uruguay)
Pteropodidae Fruit bats, flying foxes			
	Acerodon jubatus ***Pteropus insularis*** ***Pteropus loochoensis***	***Acerodon* spp.** (Except the species included in Appendix I) ***Pteropus* spp.** (Except the species included in Appendix I and *Pteropus brunneus*)	

	Appendices		
	I	II	III
	Pteropus mariannus ***Pteropus molossinus*** ***Pteropus pelewensis*** ***Pteropus pilosus*** ***Pteropus samoensis*** ***Pteropus tonganus*** ***Pteropus ualanus*** ***Pteropus yapensis***		
CINGULATA			
Dasypodidae Armadillos			
	Priodontes maximus	***Chaetophractus nationi*** (A zero annual export quota has been established. All specimens shall be deemed to be specimens of species included in Appendix I and the trade in them shall be regulated accordingly)	***Cabassous centralis*** (Costa Rica) ***Cabassous tatouay*** (Uruguay)
DASYUROMORPHIA			
Dasyuridae Dunnarts			
	Sminthopsis longicaudata ***Sminthopsis psammophila***		
DIPROTODONTIA			
Macropodidae Kangaroos, wallabies			
	Lagorchestes hirsutus ***Lagostrophus fasciatus*** ***Onychogalea fraenata***	***Dendrolagus inustus*** ***Dendrolagus ursinus***	
Phalangeridae Cuscuses			
		Phalanger intercastellanus ***Phalanger mimicus*** ***Phalanger orientalis*** ***Spilocuscus kraemeri***	

	Appendices		
	I	II	III
		Spilocuscus maculatus ***Spilocuscus papuensis***	
Potoroidae Rat-kangaroos			
	***Bettongia* spp.**		
Vombatidae Wombats			
	Lasiorhinus krefftii		
LAGOMORPHA			
Leporidae Hares, rabbits			
	Caprolagus hispidus ***Romerolagus diazi***		
MONOTREMATA			
Tachyglossidae Echidnas, spiny anteaters			
		***Zaglossus* spp.**	
PERAMELEMORPHIA			
Peramelidae Bandicoots, echymiperas			
	Perameles bougainville		
Thylacomyidae Bilbies			
	Macrotis lagotis		
PERISSODACTYLA			
Equidae Horses, wild asses, zebras			
	Equus africanus (Excludes the domesticated form, which is referenced as *Equus asinus*, and is not subject to the provisions of the Convention) ***Equus grevyi*** ***Equus hemionus hemionus*** ***Equus hemionus khur*** ***Equus przewalskii***	***Equus hemionus*** (Except the subspecies included in Appendix I) ***Equus kiang*** ***Equus zebra hartmannae*** ***Equus zebra zebra***	

	Appendices		
	I	II	III
Rhinocerotidae Rhinoceroses			
	Rhinocerotidae spp. (Except the subspecies included in Appendix II)	***Ceratotherium simum simum*** (Only the populations of South Africa and Swaziland; all other populations are included in Appendix I. For the exclusive purpose of allowing international trade in live animals to appropriate and acceptable destinations and hunting trophies. All other specimens shall be deemed to be specimens of species included in Appendix I and the trade in them shall be regulated accordingly)	
Tapiridae Tapirs			
	Tapiridae spp. (Except the species included in Appendix II)	***Tapirus terrestris***	
PHOLIDOTA			
Manidae Pangolins			
	Manis crassicaudata ***Manis culionensis*** ***Manis gigantea*** ***Manis javanica*** ***Manis pentadactyla*** ***Manis temminckii*** ***Manis tetradactyla*** ***Manis tricuspis***	***Manis* spp.** (Except the species included in Appendix I)	
PILOSA			
Bradypodidae Three-toed sloths			
		Bradypus pygmaeus ***Bradypus variegatus***	
Megalonychidae Two-toed sloths			
			Choloepus hoffmanni (Costa Rica)

	Appendices		
	I	II	III
Myrmecophagidae American anteaters			
		Myrmecophaga tridactyla	***Tamandua mexicana*** (Guatemala)
PRIMATES Apes, monkeys			
		PRIMATES spp. (Except the species included in Appendix I)	
Atelidae Howler monkeys, spider monkeys			
	Alouatta coibensis ***Alouatta palliata*** ***Alouatta pigra*** ***Ateles geoffroyi frontatus*** ***Ateles geoffroyi ornatus*** ***Brachyteles arachnoides*** ***Brachyteles hypoxanthus*** ***Oreonax flavicauda***		
Cebidae Marmosets, tamarins, new-world monkeys			
	Callimico goeldii ***Callithrix aurita*** ***Callithrix flaviceps*** ***Leontopithecus* spp.** ***Saguinus bicolor*** ***Saguinus geoffroyi*** ***Saguinus leucopus*** ***Saguinus martinsi*** ***Saguinus oedipus*** ***Saimiri oerstedii***		
Cercopithecidae Old-world monkeys			
	Cercocebus galeritus ***Cercopithecus diana*** ***Cercopithecus roloway*** ***Macaca silenus*** ***Macaca sylvanus***		

	Appendices I	II	III
	Mandrillus leucophaeus ***Mandrillus sphinx*** ***Nasalis larvatus*** ***Piliocolobus kirkii*** ***Piliocolobus rufomitratus*** ***Presbytis potenziani*** ***Pygathrix* spp.** ***Rhinopithecus* spp.** ***Semnopithecus ajax*** ***Semnopithecus dussumieri*** ***Semnopithecus entellus*** ***Semnopithecus hector*** ***Semnopithecus hypoleucos*** ***Semnopithecus priam*** ***Semnopithecus schistaceus*** ***Simias concolor*** ***Trachypithecus geei*** ***Trachypithecus pileatus*** ***Trachypithecus shortridgei***		
Cheirogaleidae Dwarf lemurs			
	Cheirogaleidae spp.		
Daubentoniidae Aye-aye			
	Daubentonia madagascariensis		
Hominidae Apes, chimpanzees, gorillas, orang-utans			
	Gorilla beringei ***Gorilla gorilla*** ***Pan* spp.** ***Pongo abelii*** ***Pongo pygmaeus***		
Hylobatidae Gibbons			
	Hylobatidae spp.		
Indriidae Indris, sifakas, woolly lemurs			
	Indriidae spp.		

	Appendices		
	I	II	III
Lemuridae Large lemurs			
	Lemuridae spp.		
Lepilemuridae Sportive lemurs			
	Lepilemuridae spp.		
Lorisidae Lorises			
	***Nycticebus* spp.**		
Pitheciidae Sakis, uakaris			
	Cacajao* spp.** ***Chiropotes albinasus		
PROBOSCIDEA			
Elephantidae Elephants			
	Elephas maximus ***Loxodonta africana*** (Except the populations of Botswana, Namibia, South Africa and Zimbabwe, which are included in Appendix II subject to annotation 2)	***Loxodonta africana***[2] (Only the populations of Botswana, Namibia, South Africa and Zimbabwe; all other populations are included in Appendix I)	
RODENTIA			
Chinchillidae Chinchillas			
	***Chinchilla* spp.** (Specimens of the domesticated form are not subject to the provisions of the Convention)		

[2] Populations of Botswana, Namibia, South Africa and Zimbabwe (listed in Appendix II):
For the exclusive purpose of allowing:
a) trade in hunting trophies for non-commercial purposes;
b) trade in live animals to appropriate and acceptable destinations, as defined in Resolution Conf. 11.20 (Rev. CoP17), for Botswana and Zimbabwe and for *in situ* conservation programmes for Namibia and South Africa;
c) trade in hides;
d) trade in hair;
e) trade in leather goods for commercial or non-commercial purposes for Botswana, Namibia and South Africa and for non-commercial purposes for Zimbabwe;
f) trade in individually marked and certified ekipas incorporated in finished jewellery for non-commercial purposes for Namibia and ivory carvings for non-commercial purposes for Zimbabwe;
g) trade in registered raw ivory (for Botswana, Namibia, South Africa and Zimbabwe, whole tusks and pieces) subject to the following:

	Appendices		
	I	II	III
Cuniculidae Pacas			
			Cuniculus paca (Honduras)
Dasyproctidae Agoutis			
			Dasyprocta punctata (Honduras)
Erethizontidae New-world porcupines			
			Sphiggurus mexicanus (Honduras) ***Sphiggurus spinosus*** (Uruguay)
Muridae Mice, rats			
	Leporillus conditor ***Pseudomys fieldi praeconis*** ***Xeromys myoides*** ***Zyzomys pedunculatus***		
Sciuridae Ground squirrels, tree squirrels			
	Cynomys mexicanus	***Ratufa* spp.**	***Marmota caudata*** (India) ***Marmota himalayana*** (India) ***Sciurus deppei*** (Costa Rica)
SCANDENTIA Tree shrews			
		SCANDENTIA spp.	

i) only registered government-owned stocks, originating in the State (excluding seized ivory and ivory of unknown origin);
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. CoP17) concerning domestic manufacturing and trade;
iii) not before the Secretariat has verified the prospective importing countries and the registered government-owned stocks;
iv) raw ivory pursuant to the conditional sale of registered government-owned ivory stocks agreed at CoP12, which are 20,000 kg (Botswana), 10,000 kg (Namibia) and 30,000 kg (South Africa);
v) in addition to the quantities agreed at CoP12, government-owned ivory from Botswana, Namibia, South Africa and Zimbabwe registered by 31 January 2007 and verified by the Secretariat may be traded and despatched, with the ivory in paragraph g) iv) above, in a single sale per destination under strict supervision of the Secretariat;
vi) 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
vii) the additional quantities specified in paragraph g) v) above shall be traded only after the Standing Committee has agreed that the above conditions have been met; and

h) no further proposals to allow trade in elephant ivory from populations already in Appendix II shall be submitted to the Conference of the Parties for the period from CoP14 and ending nine years from the date of the single sale of ivory that is to take place in accordance with provisions in paragraphs g) i), g) ii), g) iii), g) vi) and g) vii). In addition such further proposals shall be dealt with in accordance with Decisions 16.55 and 14.78 (Rev. CoP16).

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.

	Appendices		
	I	II	III
SIRENIA			
Dugongidae Dugong			
	Dugong dugon		
Trichechidae Manatees			
	Trichechus inunguis ***Trichechus manatus*** ***Trichechus senegalensis***		
CLASS AVES (BIRDS)			
ANSERIFORMES			
Anatidae Ducks, geese, swans, etc.			
	Anas aucklandica ***Anas chlorotis*** ***Anas laysanensis*** ***Anas nesiotis*** ***Asarcornis scutulata*** ***Branta canadensis leucopareia*** ***Branta sandvicensis*** ***Rhodonessa caryophyllacea***	***Anas bernieri*** ***Anas formosa*** ***Branta ruficollis*** ***Coscoroba coscoroba*** ***Cygnus melancoryphus*** ***Dendrocygna arborea*** ***Oxyura leucocephala*** ***Sarkidiornis melanotos***	***Dendrocygna autumnalis*** (Honduras) ***Dendrocygna bicolor*** (Honduras)
APODIFORMES			
Trochilidae Hummingbirds			
	  Glaucis dohrnii	**Trochilidae spp.** (Except the species included in Appendix I)	

	Appendices		
	I	II	III
CHARADRIIFORMES			
Burhinidae Thick-knees			
			Burhinus bistriatus (Guatemala)
Laridae Gulls			
	Larus relictus		
Scolopacidae Curlews, greenshanks			
	Numenius borealis ***Numenius tenuirostris*** ***Tringa guttifer***		
CICONIIFORMES			
Balaenicipitidae Shoebills, whale-headed storks			
		Balaeniceps rex	
Ciconiidae Storks			
	Ciconia boyciana ***Jabiru mycteria*** ***Mycteria cinerea***	***Ciconia nigra***	
Phoenicopteridae Flamingos			
		Phoenicopteridae spp.	
Threskiornithidae Ibises, spoonbills			
	Geronticus eremita ***Nipponia nippon***	***Eudocimus ruber*** ***Geronticus calvus*** ***Platalea leucorodia***	
COLUMBIFORMES			
Columbidae Doves, pigeons			
	Caloenas nicobarica ***Ducula mindorensis***	***Gallicolumba luzonica*** ***Goura* spp.**	***Nesoenas mayeri*** (Mauritius)

	Appendices		
	I	II	III
CORACIIFORMES			
Bucerotidae Hornbills			
	Aceros nipalensis	***Aceros* spp.** (Except the species included in Appendix I)	
		***Anorrhinus* spp.**	
		***Anthracoceros* spp.**	
		***Berenicornis* spp.**	
		***Buceros* spp.** (Except the species included in Appendix I)	
	Buceros bicornis		
		***Penelopides* spp.**	
	Rhinoplax vigil		
		***Rhyticeros* spp.** (Except the species included in Appendix I)	
	Rhyticeros subruficollis		
CUCULIFORMES			
Musophagidae Turacos			
		***Tauraco* spp.**	
FALCONIFORMES Eagles, falcons, hawks, vultures			
		FALCONIFORMES spp. (Except *Caracara lutosa* and the species of the family Cathartidae, which are not included in the Appendices; and the species included in Appendices I and III)	
Accipitridae Hawks, eagles			
	Aquila adalberti		
	Aquila heliaca		
	Chondrohierax uncinatus wilsonii		
	Haliaeetus albicilla		
	Harpia harpyja		
	Pithecophaga jefferyi		

	Appendices		
	I	II	III
Cathartidae New-world vultures			
	Gymnogyps californianus ***Vultur gryphus***		***Sarcoramphus papa*** (Honduras)
Falconidae Falcons			
	Falco araeus ***Falco jugger*** ***Falco newtoni*** (Only the population of Seychelles) ***Falco pelegrinoides*** ***Falco peregrinus*** ***Falco punctatus*** ***Falco rusticolus***		
GALLIFORMES			
Cracidae Chachalacas, currassows, guans			
	Crax blumenbachii ***Mitu mitu*** ***Oreophasis derbianus*** ***Penelope albipennis*** ***Pipile jacutinga*** ***Pipile pipile***		***Crax alberti*** (Colombia) ***Crax daubentoni*** (Colombia) ***Crax globulosa*** (Colombia) ***Crax rubra*** (Colombia, Costa Rica, Guatemala, Honduras) ***Ortalis vetula*** (Guatemala, Honduras) ***Pauxi pauxi*** (Colombia) ***Penelope purpurascens*** (Honduras) ***Penelopina nigra*** (Guatemala)
Megapodiidae Megapodes, scrubfowl			
	Macrocephalon maleo		

	Appendices		
	I	II	III
Phasianidae Grouse, guineafowl, partridges, peafowl, pheasants, tragopans			
		Argusianus argus	
	Catreus wallichii		
	Colinus virginianus ridgwayi		
	Crossoptilon crossoptilon		
	Crossoptilon mantchuricum		
		Gallus sonneratii	
		Ithaginis cruentus	
	Lophophorus impejanus		
	Lophophorus lhuysii		
	Lophophorus sclateri		
	Lophura edwardsi		
			Lophura leucomelanos (Pakistan)
	Lophura swinhoii		
			Meleagris ocellata (Guatemala)
			Pavo cristatus (Pakistan)
		Pavo muticus	
		Polyplectron bicalcaratum	
		Polyplectron germaini	
		Polyplectron malacense	
	Polyplectron napoleonis		
		Polyplectron schleiermacheri	
			Pucrasia macrolopha (Pakistan)
	Rheinardia ocellata		
	Syrmaticus ellioti		
	Syrmaticus humiae		
	Syrmaticus mikado		
	Tetraogallus caspius		
	Tetraogallus tibetanus		
	Tragopan blythii		
	Tragopan caboti		
	Tragopan melanocephalus		

	Appendices		
	I	II	III
		Tympanuchus cupido attwateri	***Tragopan satyra*** (Nepal)
GRUIFORMES			
Gruidae Cranes			
	Grus americana ***Grus canadensis nesiotes*** ***Grus canadensis pulla*** ***Grus japonensis*** ***Grus leucogeranus*** ***Grus monacha*** ***Grus nigricollis*** ***Grus vipio***	**Gruidae spp.** (Except the species included in Appendix I)	
Otididae Bustards			
	Ardeotis nigriceps ***Chlamydotis macqueenii*** ***Chlamydotis undulata*** ***Houbaropsis bengalensis***	**Otididae spp.** (Except the species included in Appendix I)	
Rallidae Rails			
	Gallirallus sylvestris		
Rhynochetidae Kagu			
	Rhynochetos jubatus		
PASSERIFORMES			
Atrichornithidae Scrub-birds			
	Atrichornis clamosus		
Cotingidae Cotingas			
	Cotinga maculata ***Xipholena atropurpurea***	***Rupicola* spp.**	***Cephalopterus ornatus*** (Colombia) ***Cephalopterus penduliger*** (Colombia)

	Appendices		
	I	II	III
Emberizidae Cardinals, tanagers			
		Gubernatrix cristata ***Paroaria capitata*** ***Paroaria coronata*** ***Tangara fastuosa***	
Estrildidae Mannikins, waxbills			
		Amandava formosa ***Lonchura oryzivora*** ***Poephila cincta cincta***	
Fringillidae Finches			
	Carduelis cucullata	***Carduelis yarrellii***	
Hirundinidae Martins			
	Pseudochelidon sirintarae		
Icteridae New-world blackbirds			
	Xanthopsar flavus		
Meliphagidae Honeyeaters			
		Lichenostomus melanops cassidix	
Muscicapidae Old-world flycatchers			
	Dasyornis broadbenti litoralis ***Dasyornis longirostris*** ***Picathartes gymnocephalus*** ***Picathartes oreas***	***Cyornis ruckii*** ***Garrulax canorus*** ***Garrulax taewanus*** ***Leiothrix argentauris*** ***Leiothrix lutea*** ***Liocichla omeiensis***	***Acrocephalus rodericanus*** (Mauritius) ***Terpsiphone bourbonnensis*** (Mauritius)
Paradisaeidae Birds of paradise			
		Paradisaeidae spp.	

	Appendices		
	I	II	III
Pittidae Pittas			
	Pitta gurneyi ***Pitta kochi***	***Pitta guajana*** ***Pitta nympha***	
Pycnonotidae Bulbuls			
		Pycnonotus zeylanicus	
Sturnidae Mynas, starlings			
	Leucopsar rothschildi	***Gracula religiosa***	
Zosteropidae White-eyes			
	Zosterops albogularis		
PELECANIFORMES			
Fregatidae Frigatebirds			
	Fregata andrewsi		
Pelecanidae Pelicans			
	Pelecanus crispus		
Sulidae Gannets			
	Papasula abbotti		
PICIFORMES			
Capitonidae Barbets			
			Semnornis ramphastinus (Colombia)
Picidae Woodpeckers			
	Dryocopus javensis richardsi		
Ramphastidae Toucans			
		Pteroglossus aracari ***Pteroglossus viridis*** ***Ramphastos sulfuratus*** ***Ramphastos toco*** ***Ramphastos tucanus***	***Baillonius bailloni*** (Argentina) ***Pteroglossus castanotis*** (Argentina) ***Ramphastos dicolorus*** (Argentina)

	Appendices		
	I	II	III
		Ramphastos vitellinus	***Selenidera maculirostris*** (Argentina)
PODICIPEDIFORMES			
Podicipedidae Grebes			
	Podilymbus gigas		
PROCELLARIIFORMES			
Diomedeidae Albatrosses			
	Phoebastria albatrus		
PSITTACIFORMES			
		PSITTACIFORMES spp. (Except the species included in Appendix I and *Agapornis roseicollis, Melopsittacus undulatus, Nymphicus hollandicus* and *Psittacula krameri*, which are not included in the Appendices)	
Cacatuidae Cockatoos			
	Cacatua goffiniana ***Cacatua haematuropygia*** ***Cacatua moluccensis*** ***Cacatua sulphurea*** ***Probosciger aterrimus***		
Loriidae Lories, lorikeets			
	Eos histrio ***Vini ultramarina***		
Psittacidae Amazons, macaws, parakeets, parrots			
	Amazona arausiaca ***Amazona auropalliata*** ***Amazona barbadensis*** ***Amazona brasiliensis*** ***Amazona finschi*** ***Amazona guildingii*** ***Amazona imperialis*** ***Amazona leucocephala*** ***Amazona oratrix***		

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	I	II	III
	Amazona pretrei		
	Amazona rhodocorytha		
	Amazona tucumana		
	Amazona versicolor		
	Amazona vinacea		
	Amazona viridigenalis		
	Amazona vittata		
	***Anodorhynchus* spp.**		
	Ara ambiguus		
	Ara glaucogularis		
	Ara macao		
	Ara militaris		
	Ara rubrogenys		
	Cyanopsitta spixii		
	Cyanoramphus cookii		
	Cyanoramphus forbesi		
	Cyanoramphus novaezelandiae		
	Cyanoramphus saisseti		
	Cyclopsitta diophthalma coxeni		
	Eunymphicus cornutus		
	Guarouba guarouba		
	Neophema chrysogaster		
	Ognorhynchus icterotis		
	Pezoporus occidentalis		
	Pezoporus wallicus		
	Pionopsitta pileata		
	Primolius couloni		
	Primolius maracana		
	Psephotus chrysopterygius		
	Psephotus dissimilis		
	Psephotus pulcherrimus		
	Psittacula echo		
	Psittacus erithacus		
	Pyrrhura cruentata		

	Appendices		
	I	II	III
	Rhynchopsitta* spp.** ***Strigops habroptilus		
RHEIFORMES			
Rheidae Rheas			
	Pterocnemia pennata (Except *Pterocnemia pennata pennata* which is included in Appendix II)	***Pterocnemia pennata pennata*** ***Rhea americana***	
SPHENISCIFORMES			
Spheniscidae Penguins			
	Spheniscus humboldti	***Spheniscus demersus***	
STRIGIFORMES Owls			
		STRIGIFORMES spp. (Except the species included in Appendix I and *Sceloglaux albifacies*)	
Strigidae Owls			
	Heteroglaux blewitti ***Mimizuku gurneyi*** ***Ninox natalis***		
Tytonidae Barn owls			
	Tyto soumagnei		
STRUTHIONIFORMES			
Struthionidae Ostriches			
	Struthio camelus (Only the populations of Algeria, Burkina Faso, Cameroon, the Central African Republic, Chad, Mali, Mauritania, Morocco, the Niger, Nigeria, Senegal and the Sudan; all other populations are not included in the Appendices)		
TINAMIFORMES			
Tinamidae Tinamous			
	Tinamus solitarius		

	Appendices		
	I	II	III
TROGONIFORMES			
Trogonidae Quetzals			
	Pharomachrus mocinno		
CLASS REPTILIA (REPTILES)			
CROCODYLIA Alligators, caimans, crocodiles			
		CROCODYLIA spp. (Except the species included in Appendix I)	
Alligatoridae Alligators, caimans			
	Alligator sinensis ***Caiman crocodilus apaporiensis*** ***Caiman latirostris*** (Except the population of Argentina, which is included in Appendix II) ***Melanosuchus niger*** (Except the population of Brazil, which is included in Appendix II, and the population of Ecuador, which is included in Appendix II 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)		
Crocodylidae Crocodiles			
	Crocodylus acutus (Except the population of the Integrated Management District of Mangroves of the Bay of Cispata, Tinajones, La Balsa and Surrounding Areas, Department of Córdoba, Colombia, and the population of Cuba, which are included in Appendix II) ***Crocodylus cataphractus*** ***Crocodylus intermedius*** ***Crocodylus mindorensis***		

	Appendices I	II	III
	Crocodylus moreletii (Except the population of Belize, which is included in Appendix II with a zero quota for wild specimens traded for commercial purposes, and the population of Mexico, which is included in Appendix II) ***Crocodylus niloticus*** [Except the populations of Botswana, Egypt (subject to a zero quota for wild specimens traded for commercial purposes), Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Namibia, South Africa, Uganda, the United Republic of Tanzania (subject to an annual export quota of no more than 1,600 wild specimens including hunting trophies, in addition to ranched specimens), Zambia and Zimbabwe, which are included in Appendix II] ***Crocodylus palustris*** ***Crocodylus porosus*** {Except the populations of Australia, Indonesia, Malaysia [wild harvest restricted to the State of Sarawak and a zero quota for wild specimens for the other States of Malaysia (Sabah and Peninsular Malaysia), with no change in the zero quota unless approved by the Parties] and Papua New Guinea, which are included in Appendix II} ***Crocodylus rhombifer*** ***Crocodylus siamensis*** ***Osteolaemus tetraspis*** ***Tomistoma schlegelii***		
Gavialidae Gavials			
	Gavialis gangeticus		
RHYNCHOCEPHALIA			
Sphenodontidae Tuataras			
	***Sphenodon* spp.**		

	Appendices		
	I	II	III
SAURIA			
Agamidae Spiny-tailed lizards, agamas			
		***Saara* spp.** ***Uromastyx* spp.**	
Anguidae Alligator lizards			
	Abronia anzuetoi ***Abronia campbelli*** ***Abronia fimbriata*** ***Abronia frosti*** ***Abronia meledona***	***Abronia* spp.** [except the species included in Appendix I (zero export quota for wild specimens for *Abronia aurita, A. gaiophantasma, A. montecristoi, A. salvadorensis* and *A. vasconcelosii*)]	
Chamaeleonidae Chameleons			
	Brookesia perarmata	***Archaius* spp.** ***Bradypodion* spp.** ***Brookesia* spp.** (Except the species included in Appendix I) ***Calumma* spp.** ***Chamaeleo* spp.** ***Furcifer* spp.** ***Kinyongia* spp.** ***Nadzikambia* spp.** ***Palleon* spp.** ***Rhampholeon* spp.** ***Rieppeleon* spp.** ***Trioceros* spp.**	
Cordylidae Spiny-tailed lizards			
		***Cordylus* spp.** ***Hemicordylus* spp.** ***Karusaurus* spp.**	

	Appendices		
	I	II	III
		***Namazonurus* spp.** ***Ninurta* spp.** ***Ouroborus* spp.** ***Pseudocordylus* spp.** ***Smaug* spp.**	
Gekkonidae Geckos			
	Cnemaspis psychedelica ***Lygodactylus williamsi***	 ***Nactus serpensinsula*** ***Naultinus* spp.** ***Paroedura masobe*** ***Phelsuma* spp.** ***Rhoptropella* spp.** ***Uroplatus* spp.**	***Dactylocnemis* spp.** (New Zealand) ***Hoplodactylus* spp.** (New Zealand) ***Mokopirirakau* spp.** (New Zealand) ***Toropuku* spp.**(New Zealand) ***Tukutuku* spp.** (New Zealand) ***Woodworthia* spp.** (New Zealand)
Helodermatidae Beaded lizards, gila monsters			
	Heloderma horridum charlesbogerti	***Heloderma* spp.** (Except the subspecies included in Appendix I)	
Iguanidae Iguanas			
	***Brachylophus* spp.** ***Cyclura* spp.**	***Amblyrhynchus cristatus*** ***Conolophus* spp.** ***Ctenosaura bakeri*** ***Ctenosaura melanosterna*** ***Ctenosaura oedirhina*** ***Ctenosaura palearis*** ***Iguana* spp.**	

	Appendices		
	I	II	III
	Sauromalus varius	***Phrynosoma blainvillii*** ***Phrynosoma cerroense*** ***Phrynosoma coronatum*** ***Phrynosoma wigginsi***	
Lacertidae Lizards			
	Gallotia simonyi	***Podarcis lilfordi*** ***Podarcis pityusensis***	
Lanthanotidae Earless monitor lizards			
		Lanthanotidae spp. (Zero export quota for wild specimens for commercial purposes)	
Scincidae Skinks			
		Corucia zebrata	
Teiidae Caiman lizards, tegu lizards			
		Crocodilurus amazonicus ***Dracaena* spp.** ***Salvator* spp.** ***Tupinambis* spp.**	
Varanidae Monitor lizards			
	Varanus bengalensis ***Varanus flavescens*** ***Varanus griseus*** ***Varanus komodoensis*** ***Varanus nebulosus***	***Varanus* spp.** (Except the species included in Appendix I)	
Xenosauridae Chinese crocodile lizard			
	Shinisaurus crocodilurus		

	Appendices		
	I	II	III
SERPENTES			
Boidae Boas			
	Acrantophis* spp.** ***Boa constrictor occidentalis ***Epicrates inornatus*** ***Epicrates monensis*** ***Epicrates subflavus*** ***Sanzinia madagascariensis***	**Boidae spp.** (Except the species included in Appendix I)	
Bolyeriidae Round Island boas			
	Bolyeria multocarinata ***Casarea dussumieri***	**Bolyeriidae spp.** (Except the species included in Appendix I)	
Colubridae Typical snakes, water snakes, whipsnakes			
		Clelia clelia ***Cyclagras gigas*** ***Elachistodon westermanni*** ***Ptyas mucosus***	***Atretium schistosum*** (India) ***Cerberus rynchops*** (India) ***Xenochrophis piscator*** (India) ***Xenochrophis schnurrenbergeri*** (India) ***Xenochrophis tytleri*** (India)
Elapidae Cobras, coral snakes			
		Hoplocephalus bungaroides ***Naja atra*** ***Naja kaouthia*** ***Naja mandalayensis***	***Micrurus diastema*** (Honduras) ***Micrurus nigrocinctus*** (Honduras) ***Micrurus ruatanus*** (Honduras)

	Appendices		
	I	II	III
		Naja naja ***Naja oxiana*** ***Naja philippinensis*** ***Naja sagittifera*** ***Naja samarensis*** ***Naja siamensis*** ***Naja sputatrix*** ***Naja sumatrana*** ***Ophiophagus hannah***	
Loxocemidae Mexican dwarf boas			
		Loxocemidae spp.	
Pythonidae Pythons			
	Python molurus molurus	**Pythonidae spp.** (Except the subspecies included in Appendix I)	
Tropidophiidae Wood boas			
		Tropidophiidae spp.	
Viperidae Vipers			
	Vipera ursinii (Only the population of Europe, except the area which formerly constituted the Union of Soviet Socialist Republics; these latter populations are not included in the Appendices)	***Atheris desaixi*** ***Bitis worthingtoni*** ***Trimeresurus mangshanensis*** ***Vipera wagneri***	***Crotalus durissus*** (Honduras) ***Daboia russelii*** (India)
TESTUDINES			
Carettochelyidae Pig-nosed turtles			
		Carettochelys insculpta	

	Appendices		
	I	II	III
Chelidae Austro-American sideneck turtles			
	Pseudemydura umbrina	***Chelodina mccordi*** (Zero export quota for specimens from the wild)	
Cheloniidae Sea turtles			
	Cheloniidae spp.		
Chelydridae Snapping turtles			
			Chelydra serpentina (United States of America) ***Macrochelys temminckii*** (United States of America)
Dermatemydidae Central American river turtles			
		Dermatemys mawii	
Dermochelyidae Leatherback turtles			
	Dermochelys coriacea		
Emydidae Box turtles, freshwater turtles			
	Glyptemys muhlenbergii ***Terrapene coahuila***	***Clemmys guttata*** ***Emydoidea blandingii*** ***Glyptemys insculpta*** ***Malaclemys terrapin*** ***Terrapene* spp.** (Except the species included in Appendix I)	***Graptemys* spp.** (United States of America)
Geoemydidae Box turtles, freshwater turtles			
	Batagur affinis ***Batagur baska***	***Batagur borneoensis*** (Zero quota for wild specimens for commercial purposes)	

	Appendices		
	I	II	III
		Batagur dhongoka	
		Batagur kachuga	
		Batagur trivittata (Zero quota for wild specimens for commercial purposes)	
		***Cuora* spp.** (Zero quota for wild specimens for commercial purposes for *Cuora aurocapitata, C. bourreti, C. flavomarginata, C. galbinifrons, C. mccordi, C. mouhotii, C. pani, C. picturata, C. trifasciata, C. yunnanensis and C. zhoui*)	
		***Cyclemys* spp.**	
	Geoclemys hamiltonii		
		Geoemyda japonica	
		Geoemyda spengleri	
		Hardella thurjii	
		Heosemys annandalii (Zero quota for wild specimens for commercial purposes)	
		Heosemys depressa (Zero quota for wild specimens for commercial purposes)	
		Heosemys grandis	
		Heosemys spinosa	
		Leucocephalon yuwonoi	
		Malayemys macrocephala	
		Malayemys subtrijuga	
		Mauremys annamensis (Zero quota for wild specimens for commercial purposes)	
			Mauremys iversoni (China)
		Mauremys japonica	
			Mauremys megalocephala (China)
		Mauremys mutica	
		Mauremys nigricans	
			Mauremys pritchardi (China)
			Mauremys reevesii (China)

	Appendices		
	I	II	III
	Melanochelys tricarinata	***Melanochelys trijuga***	***Mauremys sinensis*** (China)
	Morenia ocellata	***Morenia petersi***	
		Notochelys platynota	
			Ocadia glyphistoma (China)
			Ocadia philippeni (China)
		Orlitia borneensis (Zero quota for wild specimens for commercial purposes)	
		***Pangshura* spp.** (Except the species included in Appendix I)	
	Pangshura tecta		
		Sacalia bealei	
			Sacalia pseudocellata (China)
		Sacalia quadriocellata	
		Siebenrockiella crassicollis	
		Siebenrockiella leytensis	
		Vijayachelys silvatica	
Platysternidae Big-headed turtles			
	Platysternidae spp.		
Podocnemididae Afro-American sideneck turtles			
		Erymnochelys madagascariensis	
		Peltocephalus dumerilianus	
		***Podocnemis* spp.**	
Testudinidae Tortoises			
		Testudinidae spp. (Except the species included in Appendix I. A zero annual export quota has been established for *Centrochelys sulcata* for specimens removed from the wild and traded for primarily commercial purposes)	
	Astrochelys radiata		
	Astrochelys yniphora		
	Chelonoidis niger		

	Appendices I	Appendices II	Appendices III
	Geochelone platynota		
	Gopherus flavomarginatus		
	Psammobates geometricus		
	Pyxis arachnoides		
	Pyxis planicauda		
	Testudo kleinmanni		
Trionychidae Softshell turtles			
		Amyda cartilaginea	***Apalone ferox*** (United States of America) ***Apalone mutica*** (United States of America) ***Apalone spinifera*** (Except the subspecies included in Appendix I) (United States of America)
	Apalone spinifera atra		
		***Chitra* spp.** (Except the species included in Appendix I)	
	Chitra chitra		
	Chitra vandijki		
		Cyclanorbis elegans	
		Cyclanorbis senegalensis	
		Cycloderma aubryi	
		Cycloderma frenatum	
		Dogania subplana	
		Lissemys ceylonensis	
		Lissemys punctata	
		Lissemys scutata	
		Nilssonia formosa	
	Nilssonia gangetica		
	Nilssonia hurum		
		Nilssonia leithii	
	Nilssonia nigricans		
		Palea steindachneri	
		***Pelochelys* spp.**	
		Pelodiscus axenaria	

	Appendices		
	I	II	III
		Pelodiscus maackii ***Pelodiscus parviformis*** ***Rafetus euphraticus*** ***Rafetus swinhoei*** ***Trionyx triunguis***	
CLASS AMPHIBIA (AMPHIBIANS)			
ANURA			
Aromobatidae Cryptic forest frogs			
		Allobates femoralis ***Allobates hodli*** ***Allobates myersi*** ***Allobates zaparo*** ***Anomaloglossus rufulus***	
Bufonidae Toads			
	Amietophrynus channingi ***Amietophrynus superciliaris*** ***Altiphrynoides* spp.** ***Atelopus zeteki*** ***Incilius periglenes*** ***Nectophrynoides* spp.** ***Nimbaphrynoides* spp.**		
Calyptocephalellidae Chilean toads			
			Calyptocephalella gayi (Chile)
Dendrobatidae Poison frogs			
		Adelphobates* spp.** ***Ameerega* spp.** ***Andinobates* spp.** ***Dendrobates* spp.** ***Epipedobates* spp.** ***Excidobates* spp.** ***Hyloxalus azureiventris ***Minyobates* spp.** ***Oophaga* spp.** ***Phyllobates* spp.** ***Ranitomeya* spp.**	

	Appendices I	II	III
Dicroglossidae Frogs			
		Euphlyctis hexadactylus ***Hoplobatrachus tigerinus***	
Hylidae Tree frogs			
		***Agalychnis* spp.**	
Mantellidae Mantella frogs			
		***Mantella* spp.**	
Microhylidae Tomato frogs			
		Dyscophus antongilii ***Dyscophus guineti*** ***Dyscophus insularis*** ***Scaphiophryne boribory*** ***Scaphiophryne gottlebei*** ***Scaphiophryne marmorata*** ***Scaphiophryne spinosa***	
Myobatrachidae Gastric-brooding frogs			
		***Rheobatrachus* spp.** (Except *Rheobatrachus silus* and *Rheobatrachus vitellinus* which are not included in the Appendices)	
Telmatobiidae Andean water frogs			
	Telmatobius culeus		
CAUDATA			
Ambystomatidae Axolotls, mole salamanders			
		Ambystoma dumerilii ***Ambystoma mexicanum***	
Cryptobranchidae Giant salamanders			
	***Andrias* spp.**		***Cryptobranchus alleganiensis*** (United States of America)
Hynobiidae Asiatic salamanders			
			Hynobius amjiensis (China)

	Appendices		
	I	**II**	**III**
Salamandridae Newts and salamanders			
	Neurergus kaiseri	***Paramesotriton hongkongensis***	***Salamandra algira*** (Algeria)
CLASS ELASMOBRANCHII (SHARKS)			
CARCHARHINIFORMES			
Carcharhinidae Requiem sharks			
		Carcharhinus falciformis ***Carcharhinus longimanus***	
Sphyrnidae Hammerhead sharks			
		Sphyrna lewini ***Sphyrna mokarran*** ***Sphyrna zygaena***	
LAMNIFORMES			
Alopiidae Thresher sharks			
		***Alopias* spp.**	
Cetorhinidae Basking sharks			
		Cetorhinus maximus	
Lamnidae Mackerel sharks			
		Carcharodon carcharias ***Lamna nasus***	
MYLIOBATIFORMES			
Myliobatidae Eagle and mobulid rays			
		***Manta* spp.** ***Mobula* spp.**	
Potamotrygonidae Freshwater stingrays			
			Paratrygon aiereba (Colombia) ***Potamotrygon* spp.** (population of Brazil) (Brazil) ***Potamotrygon constellata*** (Colombia) ***Potamotrygon magdalenae*** (Colombia) ***Potamotrygon motoro*** (Colombia)

	Appendices		
	I	II	III
			Potamotrygon orbignyi (Colombia) ***Potamotrygon schroederi*** (Colombia) ***Potamotrygon scobina*** (Colombia) ***Potamotrygon yepezi*** (Colombia)
ORECTOLOBIFORMES			
Rhincodontidae Whale sharks			
		Rhincodon typus	
PRISTIFORMES			
Pristidae Sawfishes			
	Pristidae spp.		
CLASS ACTINOPTERI (FISHES)			
ACIPENSERIFORMES			
		ACIPENSERIFORMES spp. (Except the species included in Appendix I)	
Acipenseridae Sturgeons			
	Acipenser brevirostrum ***Acipenser sturio***		
ANGUILLIFORMES			
Anguillidae Freshwater eels			
		Anguilla anguilla	
CYPRINIFORMES			
Catostomidae Cui-ui			
	Chasmistes cujus		
Cyprinidae Carps			
	Probarbus jullieni	***Caecobarbus geertsii***	
OSTEOGLOSSIFORMES			
Arapaimidae Arapaimas			
		Arapaima gigas	
Osteoglossidae Bonytongue			
	Scleropages formosus ***Scleropages inscriptus***		

	Appendices		
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PERCIFORMES			
Labridae Wrasses			
		Cheilinus undulatus	
Pomacanthidae Angelfishes			
		Holacanthus clarionensis	
Sciaenidae Totoaba			
	Totoaba macdonaldi		
SILURIFORMES			
Pangasiidae Pangasid catfish			
	Pangasianodon gigas		
Loricariidae Armoured catfishes			
			Hypancistrus zebra (Brazil)
SYNGNATHIFORMES			
Syngnathidae Pipefishes, seahorses			
		***Hippocampus* spp.**	
CLASS DIPNEUSTI (LUNGFISHES)			
CERATODONTIFORMES			
Neoceratodontidae Australian lungfishes			
		Neoceratodus forsteri	
CLASS COELACANTHI (COELACANTHS)			
COELACANTHIFORMES			
Latimeriidae Coelacanths			
	***Latimeria* spp.**		
PHYLUM ECHINODERMATA CLASS HOLOTHUROIDEA (SEA CUCUMBERS)			
ASPIDOCHIROTIDA			
Stichopodidae Sea cucumbers			
			Isostichopus fuscus (Ecuador)

	Appendices		
	I	II	III
PHYLUM ARTHROPODA CLASS ARACHNIDA (SCORPIONS AND SPIDERS)			
ARANEAE			
Theraphosidae Red-kneed tarantulas, tarantulas			
		Aphonopelma albiceps ***Aphonopelma pallidum*** ***Brachypelma* spp.**	
SCORPIONES			
Scorpionidae Scorpions			
		Pandinus dictator ***Pandinus gambiensis*** ***Pandinus imperator*** ***Pandinus roeseli***	
CLASS INSECTA (INSECTS)			
COLEOPTERA			
Lucanidae Stag beetles			
			***Colophon* spp.** (South Africa)
Scarabaeidae Scarab beetles			
		Dynastes satanas	
LEPIDOPTERA			
Nymphalidae Brush-footed butterflies			***Agrias amydon boliviensis*** (Plurinational State of Bolivia) ***Morpho godartii lachaumei*** (Plurinational State of Bolivia) ***Prepona praeneste buckleyana*** (Plurinational State of Bolivia)
Papilionidae Birdwing butterflies, swallowtail butterflies			
		Atrophaneura jophon ***Atrophaneura pandiyana*** ***Bhutanitis* spp.** ***Ornithoptera* spp.** (Except the species included in Appendix I)	

	Appendices I	Appendices II	Appendices III
	Ornithoptera alexandrae ***Papilio chikae*** ***Papilio homerus***	***Papilio hospiton*** ***Parnassius apollo*** ***Teinopalpus* spp.** ***Trogonoptera* spp.** ***Troides* spp.**	
PHYLUM ANNELIDA **CLASS HIRUDINOIDEA (LEECHES)**			
ARHYNCHOBDELLIDA			
Hirudinidae Medicinal leeches			
		Hirudo medicinalis ***Hirudo verbana***	
PHYLUM MOLLUSCA **CLASS BIVALVIA (CLAMS AND MUSSELS)**			
MYTILOIDA			
Mytilidae Marine mussels			
		Lithophaga lithophaga	
UNIONOIDA			
Unionidae Freshwater mussels, pearly mussels			
	Conradilla caelata ***Dromus dromas*** ***Epioblasma curtisi*** ***Epioblasma florentina*** ***Epioblasma sampsonii*** ***Epioblasma sulcata perobliqua*** ***Epioblasma torulosa gubernaculum*** ***Epioblasma torulosa torulosa*** ***Epioblasma turgidula*** ***Epioblasma walkeri***	***Cyprogenia aberti*** ***Epioblasma torulosa rangiana***	

	Appendices I	Appendices II	Appendices III
	Fusconaia cuneolus		
	Fusconaia edgariana		
	Lampsilis higginsii		
	Lampsilis orbiculata orbiculata		
	Lampsilis satur		
	Lampsilis virescens		
	Plethobasus cicatricosus		
	Plethobasus cooperianus		
		Pleurobema clava	
	Pleurobema plenum		
	Potamilus capax		
	Quadrula intermedia		
	Quadrula sparsa		
	Toxolasma cylindrella		
	Unio nickliniana		
	Unio tampicoensis tecomatensis		
	Villosa trabalis		
VENEROIDA			
Tridacnidae Giant clams			
		Tridacnidae spp.	
CLASS CEPHALOPODA (SQUIDS, OCTOPUSES, CUTTLEFISH)			
NAUTILIDA			
Nautilidae Chambered nautilus			
		Nautilidae spp.	
CLASS GASTROPODA (SNAILS AND CONCHES)			
MESOGASTROPODA			
Strombidae True conchs			
		Strombus gigas	
STYLOMMATOPHORA			
Achatinellidae Agate snails, oahu tree snails			
	***Achatinella* spp.**		

	Appendices		
	I	**II**	**III**
Camaenidae Green tree snails			
		Papustyla pulcherrima	
Cepolidae Helicoid terrestrial snails			
	***Polymita* spp.**		
PHYLUM CNIDARIA CLASS ANTHOZOA (CORALS AND SEA ANEMONES)			
ANTIPATHARIA Black corals			
		ANTIPATHARIA spp.	
GORGONACEAE			
Coralliidae Red and pink corals			
			Corallium elatius (China) ***Corallium japonicum*** (China) ***Corallium konjoi*** (China) ***Corallium secundum*** (China)
HELIOPORACEA			
Helioporidae Blue corals			
		Helioporidae spp. (Includes only the species *Heliopora coerulea*. Fossils are not subject to the provisions of the Convention)	
SCLERACTINIA Stony corals			
		SCLERACTINIA spp. (Fossils are not subject to the provisions of the Convention)	
STOLONIFERA			
Tubiporidae Organ-pipe corals			
		Tubiporidae spp. (Fossils are not subject to the provisions of the Convention)	
CLASS HYDROZOA (SEA FERNS, FIRE CORALS AND STINGING MEDUSAE)			
MILLEPORINA			

	Appendices		
	I	II	III
Milleporidae Fire corals			
		Milleporidae spp. (Fossils are not subject to the provisions of the Convention)	
STYLASTERINA			
Stylasteridae Lace corals			
		Stylasteridae spp. (Fossils are not subject to the provisions of the Convention)	

	Appendices		
	I	II	III
FLORA (PLANTS)			
AGAVACEAE Agaves			
	Agave parviflora	***Agave victoriae-reginae*** [#4] ***Nolina interrata*** ***Yucca queretaroensis***	
AMARYLLIDACEAE Snowdrops, sternbergias			
		***Galanthus* spp.** [#4] ***Sternbergia* spp.** [#4]	
ANACARDIACEAE Cashews			
		Operculicarya decaryi ***Operculicarya hyphaenoides*** ***Operculicarya pachypus***	
APOCYNACEAE Elephant trunks, hoodias			
	Pachypodium ambongense ***Pachypodium baronii***	***Hoodia* spp.** [#9] ***Pachypodium* spp.** [#4] (Except the species included in Appendix I)	

[#4] All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

[#9] All parts and derivatives except those bearing a label:
"Produced from *Hoodia* spp. material obtained through controlled harvesting and production under the terms of an agreement with the relevant CITES Management Authority of [Botswana under agreement No. BW/xxxxxx] [Namibia under agreement No. NA/xxxxxx] [South Africa under agreement No. ZA/xxxxxx]".

	Appendices I	II	III
	Pachypodium decaryi	***Rauvolfia serpentina*** [#2]	
ARALIACEAE Ginseng			
		Panax ginseng [#3] (Only the population of the Russian Federation; no other population is included in the Appendices) ***Panax quinquefolius*** [#3]	
ARAUCARIACEAE Monkey-puzzle trees			
	Araucaria araucana		
ASPARAGACEAE Includes ponytail palms			
		***Beaucarnea* spp.**	
BERBERIDACEAE May-apple			
		Podophyllum hexandrum [#2]	
BROMELIACEAE Air plants, bromelias			
		Tillandsia harrisii [#4] ***Tillandsia kammii*** [#4] ***Tillandsia xerographica*** [#4]	

[#2] All parts and derivatives except:
a) seeds and pollen; and
b) finished products packaged and ready for retail trade.

[#3] Whole and sliced roots and parts of roots, excluding manufactured parts or derivatives, such as powders, pills, extracts, tonics, teas and confectionery.

[#4] All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

	Appendices		
	I	II	III
CACTACEAE Cacti			
	Ariocarpus* spp.** ***Astrophytum asterias ***Aztekium ritteri*** ***Coryphantha werdermannii*** ***Discocactus* spp.** ***Echinocereus ferreirianus* ssp. *lindsayi*** ***Echinocereus schmollii*** ***Escobaria minima*** ***Escobaria sneedii*** ***Mammillaria pectinifera*** (includes **ssp. *solisioides***) ***Melocactus conoideus*** ***Melocactus deinacanthus*** ***Melocactus glaucescens*** ***Melocactus paucispinus*** ***Obregonia denegrii***	**CACTACEAE spp.**[9] [#4] (Except the species included in Appendix I and except *Pereskia* spp., *Pereskiopsis* spp. and *Quiabentia* spp.)	

[9] Artificially propagated specimens of the following hybrids and/or cultivars are not subject to the provisions of the Convention:
- *Hatiora* x *graeseri*
- *Schlumbergera* x *buckleyi*
- *Schlumbergera russelliana* x *Schlumbergera truncata*
- *Schlumbergera orssichiana* x *Schlumbergera truncata*
- *Schlumbergera opuntioides* x *Schlumbergera truncata*
- *Schlumbergera truncata* (cultivars)
- Cactaceae spp. colour mutants grafted on the following grafting stocks: *Harrisia* 'Jusbertii', *Hylocereus trigonus* or *Hylocereus undatus*
- *Opuntia microdasys* (cultivars).

[#4] All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

	Appendices I	Appendices II	Appendices III
	Pachycereus militaris ***Pediocactus bradyi*** ***Pediocactus knowltonii*** ***Pediocactus paradinei*** ***Pediocactus peeblesianus*** ***Pediocactus sileri*** ***Pelecyphora* spp.** ***Sclerocactus blainei*** ***Sclerocactus brevihamatus* ssp. *tobuschii*** ***Sclerocactus brevispinus*** ***Sclerocactus cloverae*** ***Sclerocactus erectocentrus*** ***Sclerocactus glaucus*** ***Sclerocactus mariposensis*** ***Sclerocactus mesae-verdae*** ***Sclerocactus nyensis*** ***Sclerocactus papyracanthus*** ***Sclerocactus pubispinus*** ***Sclerocactus sileri*** ***Sclerocactus wetlandicus*** ***Sclerocactus wrightiae*** ***Strombocactus* spp.** ***Turbinicarpus* spp.** ***Uebelmannia* spp.**		
CARYOCARACEAE Ajo			
		Caryocar costaricense [#4]	

[#4] All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

	Appendices		
	I	II	III
COMPOSITAE (Asteraceae) Kuth			
	Saussurea costus		
CUCURBITACEAE Melons, gourds, cucurbits			
		Zygosicyos pubescens ***Zygosicyos tripartitus***	
CUPRESSACEAE Alerce, cypresses			
	Fitzroya cupressoides ***Pilgerodendron uviferum***		
CYATHEACEAE Tree-ferns			
		***Cyathea* spp.** [#4]	
CYCADACEAE Cycads			
	Cycas beddomei	**CYCADACEAE spp.** [#4] (Except the species included in Appendix I)	
DICKSONIACEAE Tree-ferns			
		Cibotium barometz [#4] ***Dicksonia* spp.** [#4] (Only the populations of the Americas; no other population is included in the Appendices)	
DIDIEREACEAE Alluaudias, didiereas			
		DIDIEREACEAE spp. [#4]	
DIOSCOREACEAE Elephant's foot, kniss			
		Dioscorea deltoidea [#4]	

[#4] All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

	Appendices		
	I	II	III
DROSERACEAE Venus' flytrap			
		Dionaea muscipula [#4]	
EBENACEAE Ebonies			
		***Diospyros* spp.** [#5] (Populations of Madagascar)	
EUPHORBIACEAE Spurges			
	Euphorbia ambovombensis ***Euphorbia capsaintemariensis*** ***Euphorbia cremersii*** (Includes the *forma viridifolia* and the var. *rakotozafyi*) ***Euphorbia cylindrifolia*** (Includes the ssp. *tuberifera*)	***Euphorbia* spp.** [#4] (Succulent species only except *Euphorbia misera* and the species included in Appendix I. Artificially propagated specimens of cultivars of *Euphorbia trigona*, 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 recognizable as artificially propagated specimens, are not subject to the provisions of the Convention)	

[#4] All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

[#5] Logs, sawn wood and veneer sheets.

	Appendices I	II	III
	Euphorbia decaryi (Includes the vars. *ampanihyensis, robinsonii* and *spirosticha*) ***Euphorbia francoisii*** ***Euphorbia moratii*** (Includes the vars. *antsingiensis*, *bemarahensis* and *multiflora*) ***Euphorbia parvicyathophora*** ***Euphorbia quartziticola*** ***Euphorbia tulearensis***		
FAGACEAE Beeches			
			Quercus mongolica [#5] (Russian Federation)
FOUQUIERIACEAE Ocotillos			
	Fouquieria fasciculata ***Fouquieria purpusii***	***Fouquieria columnaris*** [#4]	
GNETACEAE Gnetums			
			Gnetum montanum [#1] (Nepal)
JUGLANDACEAE Gavilan			
		Oreomunnea pterocarpa [#4]	
LAURACEAE Laurels			

[#5] Logs, sawn wood and veneer sheets.

[#4] All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

[#1] 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*.

	Appendices		
	I	II	III
		Aniba rosaeodora [#12]	
LEGUMINOSAE (Fabaceae) Afrormosia, cristobal, palisander, rosewood, sandalwood			
	Dalbergia nigra	***Caesalpinia echinata*** [#10] ***Dalbergia* spp.** [#15] (except for the species listed in Appendix I) ***Guibourtia demeusei*** [#15] ***Guibourtia pellegriniana*** [#15] ***Guibourtia tessmannii*** [#15] ***Pericopsis elata*** [#5] ***Platymiscium pleiostachyum*** [#4] ***Pterocarpus erinaceus*** ***Pterocarpus santalinus*** [#7] ***Senna meridionalis***	***Dipteryx panamensis*** (Costa Rica, Nicaragua)

[#12] Logs, sawn wood, veneer sheets, plywood and extracts. Finished products containing such extracts as ingredients, including fragrances, are not considered to be covered by this annotation.

[#10] Logs, sawn wood, veneer sheets, including unfinished wood articles used for the fabrication of bows for stringed musical instruments.

[#15] All parts and derivatives are included, except:
a) Leaves, flowers, pollen, fruits, and seeds;
b) Non-commercial exports of a maximum total weight of 10 kg. per shipment;
c) Parts and derivatives of *Dalbergia cochinchinensis*, which are covered by Annotation # 4;
d) Parts and derivatives of *Dalbergia* spp. originating and exported from Mexico, which are covered by Annotation # 6.

[#5] Logs, sawn wood and veneer sheets.

[#4] All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

[#7] Logs, woodchips, powder and extracts.

	Appendices		
	I	II	III
LILIACEAE Aloes			
	Aloe albida	***Aloe* spp.** [#4] (Except the species included in Appendix I. Also excludes *Aloe vera*, also referenced as *Aloe barbadensis* which is not included in the Appendices)	
	Aloe albiflora		
	Aloe alfredii		
	Aloe bakeri		
	Aloe bellatula		
	Aloe calcairophila		
	Aloe compressa (Includes the vars. *paucituberculata, rugosquamosa* and *schistophila*)		
	Aloe delphinensis		
	Aloe descoingsii		
	Aloe fragilis		
	Aloe haworthioides (Includes the var. *aurantiaca*)		
	Aloe helenae		
	Aloe laeta (Includes the var. *maniaensis*)		
	Aloe parallelifolia		
	Aloe parvula		
	Aloe pillansii		
	Aloe polyphylla		
	Aloe rauhii		

[#4] All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

	Appendices		
	I	II	III
	Aloe suzannae ***Aloe versicolor*** ***Aloe vossii***		
MAGNOLIACEAE Magnolias			
			Magnolia liliifera* var. *obovata [#1] (Nepal)
MALVACEAE Includes baobabs			
		Adansonia grandidieri [#16]	
MELIACEAE Mahoganies, West Indian cedar			
		Swietenia humilis [#4]	***Cedrela fissilis*** [#5] (Plurinational State of Bolivia, Brazil) ***Cedrela lilloi*** [#5] (Plurinational State of Bolivia, Brazil) ***Cedrela odorata*** [#5] (Brazil and the Plurinational State of Bolivia. In addition, the following countries have listed their national populations: Colombia, Guatemala and Peru)

[#1] 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*.

[#16] Seeds, fruits, oil and live plants

[#5] Logs, sawn wood and veneer sheets.

[#4] All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

	Appendices		
	I	II	III
		Swietenia macrophylla [#6] (Populations of the Neotropics) ***Swietenia mahagoni*** [#5]	
NEPENTHACEAE Pitcher-plants (Old World)			
	Nepenthes khasiana ***Nepenthes rajah***	***Nepenthes* spp.** [#4] (Except the species included in Appendix I)	
OLEACEAE Ashes, etc.			
			Fraxinus mandshurica [#5] (Russian Federation)
ORCHIDACEAE Orchids			
		ORCHIDACEAE spp. [10] [#4] (Except the species included in Appendix I)	

[#6] Logs, sawn wood, veneer sheets and plywood.

[#5] Logs, sawn wood and veneer sheets.

[#4] All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

[10] 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 pests; 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.

	Appendices		
	I	II	III
	(For all of the following Appendix-I species, seedling or tissue cultures obtained *in vitro*, in solid or liquid media, and transported in sterile containers are not subject to the provisions of the Convention only if the specimens meet the definition of 'artificially propagated' agreed by the Conference of the Parties) ***Aerangis ellisii*** ***Dendrobium cruentum*** ***Laelia jongheana*** ***Laelia lobata*** ***Paphiopedilum* spp.** ***Peristeria elata*** ***Phragmipedium* spp.** ***Renanthera imschootiana***		
OROBANCHACEAE Broomrapes			
		Cistanche deserticola [#4]	
PALMAE (Arecaceae) Palms			
	Dypsis decipiens	***Beccariophoenix madagascariensis*** [#4] ***Dypsis decaryi*** [#4] ***Lemurophoenix halleuxii*** ***Marojejya darianii***	***Lodoicea maldivica*** [#13] (Seychelles)

[#4] All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

[#13] The kernel (also known as 'endosperm', 'pulp' or 'copra') and any derivative thereof.

	Appendices		
	I	II	III
		Ravenea louvelii	
		Ravenea rivularis	
		Satranala decussilvae	
		Voanioala gerardii	
PAPAVERACEAE Poppy			
			Meconopsis regia [#1] (Nepal)
PASSIFLORACEAE Passion-flowers			
		Adenia firingalavensis	
		Adenia olaboensis	
		Adenia subsessilifolia	
PEDALIACEAE Sesames			
		Uncarina grandidieri	
		Uncarina stellulifera	
PINACEAE Firs and pines			
	Abies guatemalensis		
			Pinus koraiensis [#5] (Russian Federation)
PODOCARPACEAE Podocarps			
	Podocarpus parlatorei		***Podocarpus neriifolius*** [#1] (Nepal)

[#1] 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*.

[#5] Logs, sawn wood and veneer sheets.

	Appendices		
	I	**II**	**III**
PORTULACACEAE Lewisias, portulacas, purslanes			
		Anacampseros* spp.** #4 ***Avonia* spp.** #4 ***Lewisia serrata #4	
PRIMULACEAE Cyclamens			
		***Cyclamen* spp.** [11] #4	
RANUNCULACEAE Golden seals, yellow adonis, yellow root			
		Adonis vernalis #2 ***Hydrastis canadensis*** #8	
ROSACEAE African cherry, stinkwood			
		Prunus africana #4	
RUBIACEAE Ayugue			
	Balmea stormiae		
SANTALACEAE Sandalwoods			
		Osyris lanceolata #2 (Populations of Burundi, Ethiopia, Kenya, Rwanda, Uganda and the United Republic of Tanzania)	

#4 All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

[11] Artificially propagated specimens of cultivars of *Cyclamen persicum* are not subject to the provisions of the Convention. However, the exemption does not apply to such specimens traded as dormant tubers.

#2 All parts and derivatives except:
a) seeds and pollen; and
b) finished products packaged and ready for retail trade.

#8 Underground parts (i.e. roots, rhizomes): whole, parts and powdered.

	Appendices		
	I	**II**	**III**
SARRACENIACEAE Pitcher-plants (New World)			
	Sarracenia oreophila ***Sarracenia rubra* ssp. *alabamensis*** ***Sarracenia rubra* ssp. *jonesii***	***Sarracenia* spp.** [#4] (Except the species included in Appendix I)	
SCROPHULARIACEAE Kutki			
		Picrorhiza kurrooa [#2] (Excludes *Picrorhiza scrophulariiflora)*	
STANGERIACEAE Stangerias			
	Stangeria eriopus	***Bowenia* spp.** [#4]	
TAXACEAE Himalayan yew			
		Taxus chinensis and infraspecific taxa of this species [#2] ***Taxus cuspidata*** and infraspecific taxa of this species [12] [#2] ***Taxus fuana*** and infraspecific taxa of this species [#2] ***Taxus sumatrana*** and infraspecific taxa of this species [#2] ***Taxus wallichiana*** [#2]	

[#4] All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

[#2] All parts and derivatives except:
a) seeds and pollen; and
b) finished products packaged and ready for retail trade.

[12] Artificially propagated hybrids and cultivars of *Taxus cuspidata,* live, 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.

	Appendices		
	I	II	III
THYMELAEACEAE (Aquilariaceae) Agarwood, ramin			
		***Aquilaria* spp.** [#14] ***Gonystylus* spp.** [#4] ***Gyrinops* spp.** [#14]	
TROCHODENDRACEAE (Tetracentraceae) Tetracentron			
			Tetracentron sinense [#1] (Nepal)
VALERIANACEAE Himalayan spikenard			
		Nardostachys grandiflora [#2]	
VITACEAE Grapes			
		Cyphostemma elephantopus ***Cyphostemma laza*** ***Cyphostemma montagnacii***	

[#14] All parts and derivatives except:
a) seeds and pollen;
b) seedling or tissue cultures obtained *in vitro*, in solid or liquid media, transported in sterile containers;
c) fruits;
d) leaves;
e) exhausted agarwood powder, including compressed powder in all shapes; and
f) finished products packaged and ready for retail trade, this exemption does not apply to wood chips, beads, prayer beads and carvings.

[#4] All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

[#1] 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*.

[#2] All parts and derivatives except:
a) seeds and pollen; and
b) finished products packaged and ready for retail trade.

	Appendices		
	I	II	III
WELWITSCHIACEAE Welwitschia			
		Welwitschia mirabilis [#4]	
ZAMIACEAE Cycads			
	Ceratozamia* spp.** ***Encephalartos* spp.** ***Microcycas calocoma ***Zamia restrepoi***	**ZAMIACEAE spp.** [#4] (Except the species included in Appendix I)	
ZINGIBERACEAE Ginger lily, Natal ginger			
		Hedychium philippinense [#4] ***Siphonochilus aethiopicus*** (Populations of Mozambique, South Africa, Swaziland and Zimbabwe)	
ZYGOPHYLLACEAE Lignum-vitae			
		Bulnesia sarmientoi [#11] ***Guaiacum* spp.** [#2]	

[#4] All parts and derivatives, except:
a) seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
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 of the genus *Vanilla* (Orchidaceae) and of the family Cactaceae;
e) stems, flowers, and parts and derivatives thereof, of naturalized or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (Cactaceae); and
f) finished products of *Euphorbia antisyphilitica* packaged and ready for retail trade.

[#11] Logs, sawn wood, veneer sheets, plywood, powder and extracts. Finished products containing such extracts as ingredients, including fragrances, are not considered to be covered by this annotation.

[#2] All parts and derivatives except:
a) seeds and pollen; and
b) finished products packaged and ready for retail trade.