

COMMENTARY

Can bans stimulate wildlife trade?

Proactive management of trade in endangered wildlife makes more sense than last-minute bans that can themselves increase trading activity, argue **Philippe Rivalan** and his co-authors.

Wildlife trade threatens around one-third of birds and mammals worldwide¹. A further 1,000 timber species are threatened with extinction due to felling², and 75% of fisheries are fully or over-exploited³. Yet the use of natural resources directly supports the livelihoods of around 200 million people, including many of the poorest on Earth⁴. Clearly, sustainable management of these resources is vital to the well being of both human and ecological communities. But can we meet the twin challenges of poverty reduction and species conservation in the twenty-first century?

Since 1975 one of the most effective international treaties seeking to conserve biodiversity has been the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). CITES is now one of the best supported conservation agreements, with 171 signatory parties. During the next Conference of the Parties (CoP), to be held 3–15 June 2007 in The Hague, the Netherlands, discussions will consider a range of controversial proposals to regulate wildlife trade. The most severe restriction that CITES can enforce is an explicit ban on commercial trade of wild species threatened with extinction. We report here concerns that such bans can themselves lead to an increase in trade of vulnerable species, and suggest ways to improve species management that would be in the interests of traders and conservationists alike.

CITES provides an international legal framework to regulate trading of animal and plant species, including some trophy hunting and the ivory trade. Of the around 33,600 species protected by CITES, roughly 800 are listed under Appendix I to the Convention because they are threatened with extinction and so are protected by wildlife trade bans. Another 32,500 species are listed under Appendix II because they may become threatened with extinction unless CITES regulates trade through permits and licences. The remaining 300 species are listed on Appendix III by countries seeking assistance to control trade in that species. Some have characterized CITES as an



The European eel may suffer further heavy decline if CITES delays its listing.

old-fashioned command-and-control convention⁵, in contrast with current trends towards market-based and incentive-driven conservation⁶. Critics of CITES argue that it has sometimes failed to effectively regulate trade and to enforce bans⁷.

Value added

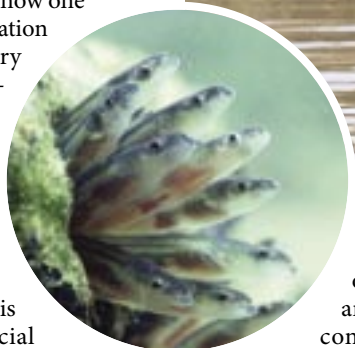
Concerns were first raised in 1985 that 'uplisting' species to a more restrictive appendix could make them more valuable to traders and consumers, but there has been no wide-ranging analysis to support this idea. Here, we analyse legal imports of wild-collected specimens from animal species uplisted from Appendix II to Appendix I between 1980 and 2003. Uplisting generally takes effect between 240 and 420 days after submission of the proposal, leaving a year for traders to acquire specimens or to clear stocks before trade restrictions apply. Our analysis shows that legal volumes of imports increased during this transition period (see graph, overleaf).

For this analysis, trade data for each species

were assigned to three time periods of 3 years each: before the uplisting proposal was submitted; during the uplisting evaluation; and after the uplisting came into force. We used reported data on gross import volumes of legal trade in wild specimens from the CITES database (www.cites.org/eng/resources/trade.shtml), and only considered species with more than five specimens traded over the whole period, for a total of 46 animal species.

The graph overleaf shows that trade volumes declined significantly after the commercial ban was in force, but a peak in trade was detected 1 year before the ban started. This peak corresponded, on average, to an increase of 135% in the trade volumes compared with previous years (see supplementary information for details of method).

Although further field-based research is needed to assess how such spikes in trade might affect individual species, in some cases the reported trade volumes alone are of concern. For example, the peak volumes of 2,800 Kleinmann's tortoises and 5,500 Geoffroy's cats imported during the transition period,



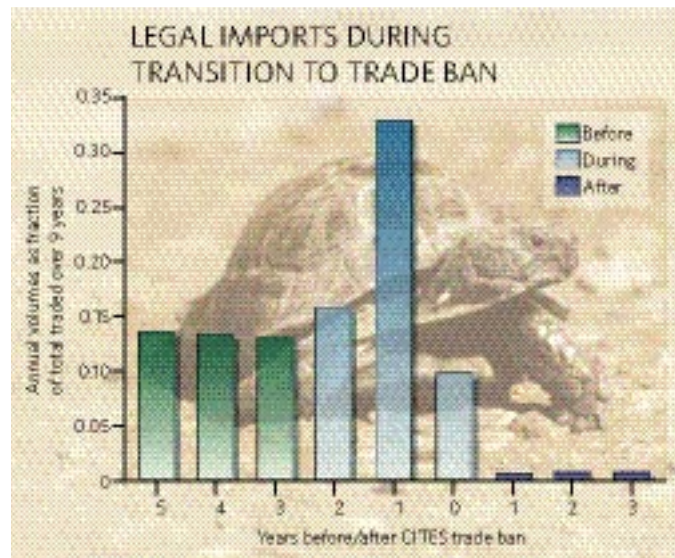
represent one-half and one-tenth, respectively, of their total estimated mature population sizes^{7,8}. In addition to increases in legal trade, uplisting of species to Appendix I may also lead to an increase in their commercial value and in illegal trading. For example, the price of rhino horn on Korean markets increased by more than 400% within 2 years of their uplisting, which in turn coincided with a sharp increase in poaching of black rhinos and in illegal trade in rhino horn. Any such illegal trade is not picked up in CITES-reported data once the uplisting takes effect and so it is much harder to track.

All available information, including that intended to protect species against trade, can be used by wildlife traders to make commercial decisions. When CITES parties meet in June to discuss 36 proposals to change species listings, they should consider that traders may anticipate uplisting during the transition period.

Early intervention

At the very least, our findings suggest that CITES authorities will need to use extra vigilance in controlling permits during transition periods and in adhering to quotas. One possibility — reducing the time between the proposed uplisting and the ban coming into force — is not practical because parties require time to evaluate uplisting proposals, and the deadlines are specified in the Convention text and so are difficult to amend. A better solution may be to find ways to manage Appendix II species so as to reduce uplistings to Appendix I. CITES might also have more chance of success if commercially important species were included in Appendix II at a point when there is still time for management to improve conservation.

This proactive approach could work well with commercially important species associated with unmanaged and illegal trade that, historically, parties have been slow to list under CITES. In the past decade, CITES has become more involved in helping to manage such high-value commodity species, including sturgeon for caviar, the sought-after humphead wrasse, and mahogany and ramin hardwood trees for timber. Listing of these species has increased collaboration with mainstream producer organizations such as the Fisheries Department of the UN Food and Agriculture Organization (FAO) and the International Tropical Timber Organization. But changes have been slow. The listing of big-leaf mahogany on Appendix II was mooted 12 years before the proposal was accepted. During that time deforestation



reduced the area of Latin American forests by more than a tenth⁹. Similarly, CITES and the FAO took 5 years to agree to collaborate on managing trade of CITES-listed commercial fishery species.

Timely listings will be particularly important at the coming CoP. Of the species proposed for listing in Appendix II, seven are commercially important: three timber and four fish species. The timber species include Central American brazilwood, rosewoods and a Latin American cedar. The fish species include the spiny dogfish, porbeagle and European eel, all of which have declined in Northern Hemisphere waters.

Sustainable trade

For some of these species, a lengthy delay in listing could have important conservation consequences. For example, European eel stocks are estimated to have declined to between 9% and 19% of their baseline abundance since 1980 and much of the annual population production is now commercially traded¹⁰. Meanwhile, trade volumes have halved over the past decade and the value of exports has increased tenfold. A prolonged delay in listing this species and coordinating management action could result in heavy population declines.

Seven more proposals call for increases in protection through Appendix I listing, but at this CoP, only two are for uplisting from Appendix II. Of these, uplisting of the Guatemalan bearded lizard risks the dangers shown in the graph, because only 170 to 250 individuals are estimated to remain in the wild. The other uplisting proposal concerns the Asian slow lorises, for which it is not clear whether or not levels of trade and population reduction warrant inclusion in Appendix I.

Over the years, CITES has diversified its

activities by encouraging positive measures to facilitate sustainable trade that will not negatively affect species survival. These measures include downlisting of species from Appendix I for ranching purposes and introducing trophy-hunting quotas for Appendix I-listed species¹¹. In line with this flexibility, a proposal for the current CoP seeks to ensure that CITES listing benefits species conservation and rural livelihoods. In addition, there is some interest in promoting certification of CITES trade, to improve local management in biodiversity-rich but economically poor nations, and to share with consumers the enforcement costs currently borne by governments.

In our view, CITES can help to deliver the sustainable use of natural resources as required by the overarching Convention on Biological Diversity. The international community needs to find ways to contribute effectively to the UN 2010 Biodiversity Target and the 2015 Millennium Development Goals. CITES faces this challenge from a sound basis of experience, expertise and infrastructure, and an ability to evolve. As they make decisions on the proposed listings and livelihood issues, CITES parties will demonstrate whether or not they have the resolve to meet the ongoing challenges of poverty reduction and species conservation. ■ Philippe Rivalan, Virginie Delmas, Elena Angulo, Leigh S. Bull, Richard J. Hall and Franck Courchamp are at University Paris-Sud, Laboratoire Ecologie, Systématique et Evolution, UMR CNRS 8079, Orsay F-91405, France. Alison M. Rosser and Nigel Leader-Williams are at the Durrell Institute of Conservation and Ecology, University of Kent, Canterbury, CT2 7NR, UK.

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Supplementary Information accompanies the paper at www.nature.com/nature.

Supplementary Methods

In our analysis, we considered legal imports of specimens from wild animal species uplisted from Appendix II to Appendix I between 1980 and 2003. Specimens recorded in the CITES trade database (<http://www.cites.org/eng/resources/trade.shtml>) without a source or with record source unknown were considered as most likely to be from wild sources and included with wild collected specimens (as suggested in the review of significant trade performed by the United Nations Environment Programme World Conservation Monitoring Centre in 2004 (AC20 Doc. 8.15)).

Trade data for each species were assigned to three time periods of three years each: before the uplisting proposal was submitted; during the uplisting evaluation; and after the uplisting came into force. For each year, the gross import volumes were expressed as a fraction of the total volume imported over the three time periods.

Time period significantly affected trade volumes (Generalized Linear Model with binomial distribution and Logit link function: $F_{2,405}=127.75$; $P<0.001$). Based on *post-hoc* comparisons, volumes traded during the uplisting evaluation period differed from volumes traded before submission of uplisting proposals (*post-hoc* comparisons: $F_{1,405}=8.01$; $P=0.005$). Volumes traded during the uplisting evaluation period were higher than volumes traded after the uplisting came into force, because of the ban in commercial trade in Appendix I species ($F_{1,405}=234.52$; $P<0.001$). Based on planned pairwise comparisons within the uplisting evaluation period, a peak in trade was detected one year before the uplisting came into force (y_{T-2} vs. y_{T-1} : $F_{1,405}=32.19$; $P<0.001$; y_{T-1} vs. y_{T0} : $F_{1,405}=66.59$; $P<0.001$).