

Understanding Markets to Conserve CITES-Listed Species

*Daniel W. S. Challender and Douglas C. MacMillan**

9.1 INTRODUCTION

Conserving biodiversity depends on implementing interventions that effectively mitigate the threats it faces. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which entered into force in 1975, is aimed at addressing the threat to wildlife from over-exploitation for international trade. The treaty seeks to ensure that international trade in approximately 39,000 species of animals and plants is ecologically sustainable and does not threaten their survival in the wild; it does so by regulating or restricting the supply of species in trade.¹ Based on an evaluation of extinction risk and trade factors, species are listed in one of three CITES Appendices that correspond to particular trade measures, up to and including international commercial trade bans on wild-sourced specimens of species.² The Convention is implemented by its member states through a system of permits, designated national agencies, and national legislation and enforcement mechanisms.³

In species conservation terms, CITES proponents can claim some success with this approach. Reported successes include the recovery of crocodilian populations,⁴ the recovery of some leopard populations in Southern Africa following the establishment of export quotas,⁵ export quotas for the Suleiman markhor in Pakistan⁶ and

* We thank Michael 't Sas-Rolfes for discussion on this chapter and for reviewing an earlier version of the chapter.

¹ Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (opened for signature 1973; entered into force 1 July 1975), <https://cites.org/eng/disc/text.php>, accessed 4 July 2022.

² How CITES works (n.d.), <https://cites.org/eng/disc/how.php>, accessed 4 July 2022.

³ Ibid.

⁴ See, e.g., R. W. G. Jenkins et al., *Review of Crocodile Ranching Programs*. Conducted for CITES by the Crocodile Specialist Group of IUCN/SSC (2004), www.stevenpoe.net/uploads/3/7/3/4/37343605/croc_ranching.pdf, accessed 4 July 2022.

⁵ R. W. G. Jenkins, 'The significant trade process: Making Appendix II work' in J. Hutton and B. Dickson, eds., *Endangered Species: Threatened Convention* 47–56 (Earthscan, 2000).

⁶ M. R. Frisina and S. N. A. Tareen, 'Exploitation prevents extinction: Case study of endangered Himalayan sheep and goats' in B. Dickson, J. Hutton and W. M. Adams, eds., *Recreational Hunting, Conservation and Rural Livelihoods: Science and Practice* 141–56 (Wiley-Blackwell in association with the Zoological Society of London (ZSL), 2009).

an Appendix I listing followed by annotations to the Appendices downlisting populations of vicuña in South America.⁷ These cases are notable because, underpinned by legislation implementing CITES, the conservation status of some of these species has improved.⁸ However, they also stand out because in each case the species concerned benefited from interventions that went beyond strict implementation of the treaty. These included efforts to incentivise local communities to participate in the management of wildlife populations, for example benefiting from the sustainable use and international trade in skins, fibres and/or hunting trophies.

Conversely, CITES has had many failures; implementation in member countries has failed and/or is failing to prevent the over-exploitation of species for international trade, legal or illegal. This is most easily demonstrated by the poaching and illegal wildlife trade crisis of the 2010s, which saw conspicuous and record levels of illegal trade in various species. This illegal trade is estimated to be worth billions of dollars globally – though these estimates are highly uncertain⁹ – and is diminishing populations of various species and eroding the integrity of ecosystems. This involves iconic species and their derivatives such as elephants, rhinoceros and big cats, as well as pangolins, slow lorises, orchids, marine fish and corals, among a plethora of other mammals, birds, amphibians, reptiles and plants.¹⁰

This failure has been attributed to various factors including a lack of compliance by parties (e.g., not enacting adequate implementing legislation),¹¹ a lack of resources among enforcement agencies (especially when facing increasingly organised and well-financed transnational criminal gangs), pervasive forces such as corruption, and a lack of political will.¹² However, CITES is also failing because it disregards the economic reality of international wildlife trade.¹³ While CITES concentrates on regulating or restricting the supply of species in trade, it fails to adequately consider demand for wildlife, market dynamics or market actors. Consumer demand for wildlife products can be complex

⁷ R. R. McAllister, D. McNeill and I. J. Gordon, 'Legalizing markets and the consequences for poaching of wildlife species: The vicuña as a case study' (2009) 90(1) *Journal of Environmental Management* 120–30.

⁸ See D. W. S. Challender, S. R. Harrop and D. C. MacMillan, 'Towards informed and multi-faceted wildlife trade interventions' (2015) 3 *Global Ecology and Conservation* 129–148.

⁹ M. 't Sas-Rolfes et al., 'Illegal wildlife trade: Scale, processes and governance' (2019) 44 *Annual Review of Environment and Resources* 201–28.

¹⁰ See Challender et al., *supra* note 8; J. Phelps and E. L. Webb, '“Invisible” wildlife trades: Southeast Asia's undocumented illegal trade in wild ornamental plants' (2015) 186 *Biological Conservation* 296–305; G. E. Rosen and K. F. Smith, 'Summarizing the evidence on the international trade in illegal wildlife' (2010) 7(1) *EcoHealth* 24–32.

¹¹ R. Reeve, *Policing International Trade in Endangered Species: The CITES Treaty and Compliance* (Royal Institute of International Affairs and Earthscan, 2002).

¹² See, e.g., Bennett, E. L. (2015). Legal ivory trade in a corrupt world and its impact on African elephant populations. *Conservation Biology* 29 (1) 54–60; Reeve, *supra* note 11.

¹³ D. W. S. Challender and D. C. MacMillan, 'Poaching is more than an enforcement problem' (2014) 7(5) *Conservation Letters* 484–94; Roe, D. et al., *Making a Killing or Making a Living: Wildlife Trade, Trade Controls, and Rural Livelihoods*. Biodiversity and Livelihoods Issues No. 6 (IIED and TRAFFIC, 2002), www.trafficj.org/publication/02_Making_Killing_or_Living.pdf, accessed 4 July 2022.

socially, culturally and economically and there may be changing market dynamics (e.g., rapidly increasing demand or growing markets), which has consequences for the effectiveness of CITES trade measures. Failure to comprehend consumer demand and market dynamics within CITES, and to actively address these forces, can result in ongoing illegal trade as trade regulations, including international trade bans, are undermined, to the detriment of the species they were designed to protect. As examples, the best available evidence indicates that populations of African elephants, Asian and African pangolins and the Asiatic black bear, among many other species, are declining owing to over-exploitation¹⁴ despite being subject to strict trade regulation in CITES; in some cases, demand for species or their parts may be increasing. The Javan rhinoceros was declared extinct in Vietnam in 2011 as a result of poaching for illicit trade in rhinoceros horn despite being subject to the strictest form of protection under CITES.¹⁵ The failure of CITES to contend with the economic reality of wildlife trade has never been more apparent, as rapid economic and social change globally means that new markets for wildlife are developing and are being promoted in new ways.¹⁶

In this chapter, the authors present an evaluation of how CITES considers market forces and dynamics when making decisions on the establishment of trade measures for species and, once species have been included in the Appendices, highlighting notable inadequacies. Through a case study on the trade in pangolins in Asia, they demonstrate such inadequacies. Finally, they make recommendations for reforms to CITES, the adoption of which would enable the parties to understand markets for species more comprehensively. They argue this would enable the adoption of more tailored interventions that would likely have a greater probability of ensuring that any harvest of CITES-listed species for international trade is ecologically sustainable.

9.2 THE NEED TO UNDERSTAND MARKETS FOR WILDLIFE

Effectively regulating wildlife trade necessitates understanding markets, including supply and demand, and prices for species and their derivative products, and how these forces and prices will likely respond to interventions such as trade regulations, including how actors (e.g., harvesters, traders and consumers) will respond.¹⁷ Within CITES, the

¹⁴ See, e.g., D. W. S. Challender, H. C. Nash and C. Waterman, eds., *Pangolins: Science, Society and Conservation* (Academic Press, 2020); Challender and MacMillan, *supra* note 13; G. Wittemyer et al., 'Illegal killing for ivory drives global decline in African elephant' (2014) 111(36) *Proceedings of the National Academy of Sciences USA* 13117–13121; D. Garshelis and R. Steinmetz, 'Ursus thibetanus (amended version of 2016 assessment)', *IUCN Red List of Threatened Species* (2020) e.T22824A166528664, <https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T22824A166528664.en>, accessed 16 May 2022.

¹⁵ S. M. Brook et al., 'Integrated and novel survey methods for rhinoceros populations confirm the extinction of *Rhinoceros sondaicus annamiticus* from Vietnam' (2012) 155 *Biological Conservation* 59–67.

¹⁶ D. Biggs et al., 'Legal trade of Africa's rhino horns' (2013) 339(6123) *Science* 1038–9.

¹⁷ D. W. S. Challender, S. R. Harrop and D. C. MacMillan, 'Understanding markets to conserve trade-threatened species in CITES' (2015) 187 *Biological Conservation* 249–59. D. Verissimo et al., 'Audience research as a cornerstone of demand management interventions for illegal wildlife products: Demarketing sea turtle meat and eggs' (2020) 2(3) *Conservation Science and Practice* e164, 10.1111/csp2.164.

first step towards regulating international trade is an assessment of species' extinction risk, which is evaluated against biological and trade criteria, to determine which criteria species meet, if any, and the adoption of corresponding measures, typically the listing of species in Appendix I or II. International trade in species listed in Appendix I (1,082 or 3 per cent of CITES species) is prohibited for commercial purposes where specimens are sourced from the wild and is otherwise permitted only in exceptional circumstances. Trade in species listed in Appendix II (37,420 or 97 per cent of CITES species) is closely regulated and permitted only when exporting parties have made an assessment that trade in specimens of a given species will not be detrimental to the survival of that species in the wild – the 'non-detriment finding' (NDF). Specifically, this requires parties to limit trade such that species are maintained throughout their geographic range at levels consistent with their ecosystem roles and above levels at which they would be eligible for inclusion in Appendix I. The 'listing criteria' (outlined in Res. Conf. 9.24, Rev. CoP17) require parties to consider factors such as species' population size, population declines and fluctuations, fragmentation of populations, area of distribution and, *inter alia*, vulnerability to intrinsic and extrinsic biological factors.¹⁸ However, despite the preamble to Res. Conf. 9.24 (Rev. CoP17) noting the objective of ensuring that decisions to amend the Appendices take into account socio-economic factors, there is no formal requirement for parties to include such information in listing proposals. There is also no explicit requirement for parties to consider or evaluate how proposed trade measures will affect market dynamics, the actors involved or the resulting impact on species, which may be positive or negative.¹⁹

The second step is implementation of trade regulations, which relies on both importing and exporting parties making NDFs and exporting parties making legal acquisition findings and subsequently granting applicable permits and certificates within CITES' rules. The Convention has evolved flexibly, and the parties also use national export quotas to limit legal supply and annotations to the Appendices to prescribe specific trade provisions (e.g., certification measures for vicuña). To monitor trade, parties are required to submit annual reports to CITES based on permits issued and data on trade are maintained in a central CITES trade database. Since 2017 the parties have also been obligated to submit data on detected illegal trade in CITES-listed species. The Convention further seeks to regulate trade through compliance mechanisms, which include the Review of Significant Trade (RST) process. Through the RST process, remedial measures are formulated to ensure that international trade in species listed in Appendix II is ecologically sustainable where evidence indicates that it may not be.

In contrast, there is little requirement for parties to consider consumer demand when submitting proposals to amend the Appendices. In the listing criteria of Res. Conf. 9.24

¹⁸ CITES, Res. Conf. 9.24 (Rev. CoP17), *Criteria for Amendment of Appendices I and II*, <https://cites.org/sites/default/files/document/E-Res-09-24-R17.pdf>, accessed 5 July 2022.

¹⁹ R. Cooney et al., 'Think before you act: Improving the conservation outcomes of CITES listing decisions' (2021) 9 *Frontiers in Ecology and Evolution* 631556.

(Rev. CoP17) this is limited to evaluation of whether species are in demand, or not, or are likely to be in demand for international trade when considering the transfer of species from Appendix I to II (Annex 4, Precautionary measures). Demand is also referred to in Annex 5 (Definitions, explanations and guidelines), whereby a species 'is or may be affected by trade' if 'there is demonstrable potential international demand for the species[], that may be detrimental to its survival in the wild', and in Annex 6 (Format for proposals to amend the Appendices) in relation to annotations to the Appendices and captive breeding and artificial propagation; the latter relates to the extent to which captive breeding or artificial propagation is 'meeting a demand that would otherwise be met by specimens from the wild'. With these exceptions, there is no requirement for parties to consider consumer demand in detail. For instance, parties are not required to consider demand trends over time, consumer profiles (e.g., demographic, or psychographic),²⁰ consumer preferences related to particular products (e.g., farmed v. wild sourced), the nature of consumer demand (e.g., price elasticities) or, related to these factors, the social and/or cultural norms and institutions related to the procurement and consumption of wildlife products (e.g., the social function that wildlife products serve). Consumer demand is otherwise referred to in only a small number of taxa-specific Resolutions²¹ which encourage parties to reduce demand for species or their derivatives, and Res. Conf. 17.4, which focusses on reducing demand for species and products in illegal trade. However, these provisions are informal, not legally binding, and may or may not be acted upon. As with consumer demand, there is no requirement in the listing criteria for parties to evaluate market dynamics for species or products in proposals to amend the Appendices.

Failure to adequately consider consumer demand and market dynamics when evaluating listing proposals means that the CITES parties disregard the economic reality of international wildlife trade. It means that they ignore economic and social analyses that can provide important insights into the likely effectiveness of proposed trade measures. For example, economic and social analysis could indicate whether demand for a species or its derivative product(s) may be persistent or growing and the extent to which consumers regard regulation (especially bans) as socially legitimate. Economic theory indicates that when supply is restricted, and there is no legitimacy-signalling effect from tighter regulation, demand will persist, causing prices to rise, thereby creating further incentives for harvest and trade. Furthermore, where demand is relatively insensitive to changes in prices (i.e., is price-inelastic), this will have the further effect of making the entire trade more profitable than before. In these circumstances, demand will continue to be met with supply, which may be illegal, despite CITES trade measures, and with possible negative impacts on species. Persistent demand being met with illegal supply is the case for many species, including pangolins, and is the focus of the case study in Box 9.1.

²⁰ D. Veríssimo, M. 't Sas-Rolfes and J. A. Glikman, 'Influencing consumer demand is vital for tackling the illegal wildlife trade' (2020) 2(4) *People and Nature* 872–6.

²¹ See, e.g., for elephants Res. Conf. 10.10, Rev. CoP18.

BOX 9.1 CASE STUDY: TRADE IN PANGOLINS IN ASIA

Pangolins are insectivorous mammals covered in individual, overlapping scales made of keratin. There are four species in Asia, which are collectively distributed from Pakistan in the west, east throughout southern China, and south throughout the Indian sub-continent, including Sri Lanka, and much of island and mainland South-East Asia, including the Palawan faunal region in the Philippines.²² The species are the Chinese (*Manis pentadactyla*), Sunda (*M. javanica*), Indian (*M. crassicaudata*) and Philippine pangolin (*M. culionensis*). Historically, pangolins in Asia have been exploited locally for consumptive use, including as a protein source, a 'tonic' food and an ingredient in traditional Asian medicine.²³ They have also been exploited for international trade, in particular involving their scales. Although pangolins are difficult to monitor in the wild and there is little quantitative data on populations,²⁴ evidence indicates that populations in China were severely reduced from the 1960s to the 1980s, to the point of being commercially extinct by the mid-1990s, and as a result China has since depended on imports of pangolin products from other range states, typically in South-East Asia.²⁵ This has, in large part, driven regional (and global) international trade in the animals and their derivatives in the last few decades and has resulted in local use in many areas in Asia being forgone in favour of supplying the animals to international markets.²⁶ Available evidence indicates that pangolin populations in parts of Asia, in particular South-East Asia, are in rapid decline owing to high rates of exploitation and illegal international trade.²⁷ Seizures of pangolins in South-East Asia in recent decades have frequently included several thousand animals, in some cases collected in

²² Challender et al., *supra* note 14.

²³ S. Xing et al., 'Meat and medicine: Historic and contemporary use in Asia' in D. W. S. Challender, H. C. Nash and C. Waterman, eds., *Pangolins: Science, Society and Conservation*, 227–39 (Academic Press, 2020). <https://doi.org/10.1016/b978-0-12-815507-3.00014-9>.

²⁴ Challender et al., *supra* note 14.

²⁵ State Administration of Traditional Chinese Medicine (SATCM), 'Guangxi Province: Cross-border trade prices for pangolins rise further' (1996) 19(4) *Zhongyaocai*; P. Newton et al., 'Pangolins in peril: Using local hunters' knowledge to conserve elusive species in Vietnam' (2008) 6(1) *Endangered Species Research* 41–53; Y. Zhang, 'Conservation and trade control of pangolins in China' in S. Pantel and S.-Y. Chin, eds., *Proceedings of the Workshop on Trade and Conservation of Pangolins Native to South and Southeast Asia*, June 30–July 2, 2008, Singapore Zoo, Singapore, 66–74 (TRAFFIC Southeast Asia, 2009).

²⁶ Newton et al., *supra* note 25; D. W. S. Challender et al., 'International trade and trafficking in pangolins, 1900–2019' in D. W. S. Challender, H. C. Nash and C. Waterman, eds., *Pangolins: Science, Society and Conservation*, 259–76 (Academic Press, 2020).

²⁷ Challender et al., *supra* note 14.

BOX 9.1 (CONT.)

short periods;²⁸ as a result, the species are reportedly rare or absent from some areas.²⁹

Asian pangolins provide a useful case study to examine how CITES seeks to control international trade in wildlife because they have a long and complex history with the Convention. The species were included in Appendix II at the inception of CITES and have been subject to its compliance mechanisms, in particular the RST process, multiple times, along with proposals to transfer the species between Appendices. At the CITES 17th Conference of the Parties (CITES COP 17) in 2016, all four species were transferred from Appendix II to I, and the four African pangolin species were also included in Appendix I. Despite these measures, and the fact that pangolins in Asia are protected by national legislation in most of their range states, the species continue to be subject to high levels of illegal harvest and trade, which occurs throughout their range in Asia. In the last decade, harvest pressure has extended to African pangolins as well, mainly in West and Central Africa.³⁰

Analyses of international trade in Asian pangolins reported to CITES between 1975 and 2000 indicate that it involved more than an estimated half a million animals,³¹ the vast majority of which (90 per cent) related to trade in skins for commercial purposes and took place before, or in, the year 2000 (Figure 9.1).³² The majority of this trade involved the Sunda pangolin. Trade also included scales, although these accounted for a much smaller proportion. While precise figures are not available, it is known that large volumes of illegal trade also took place in this period that were not reported to CITES. For example, the equivalent of an estimated additional 500,000–935,000 pangolins (in the form of live animals and scales) were also in international trade; much of this trade was destined for China.³³ Since 2000, when zero export quotas for commercial trade in wild-sourced Asian pangolins were introduced, CITES data indicate that international trade in the species declined to comparatively negligible levels.³⁴ However, seizure data indicate that a substantial illegal

²⁸ S. Pantel and N. A. Anak, *A Preliminary Assessment of Sunda Pangolin Trade in Sabah* (TRAFFIC Southeast Asia, 2010).

²⁹ E.g., Newton et al., *supra* note 25.

³⁰ Challender et al., *supra* note 26.

³¹ S. Heinrich et al., 'Where did all the pangolins go? International CITES trade in pangolin species' (2016) 8 *Global Ecology and Conservation* 241–53; Challender et al., *supra* note 8.

³² Challender et al., *supra* note 26.

³³ See *ibid.*; S. B. Wu and G. Z. Ma, 'The status and conservation of pangolins in China' (2007) 4 *TRAFFIC East Asia Newsletter* 1–5.

³⁴ Challender et al., *supra* note 26.

BOX 9.1 (CONT.)

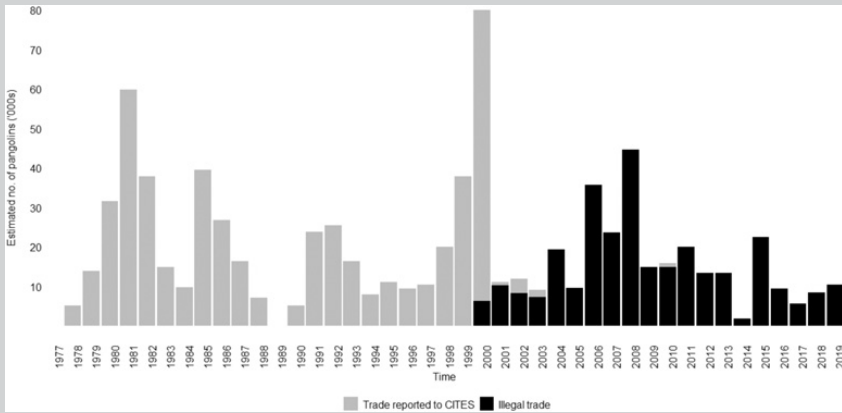


FIGURE 9.1 Estimated number of Asian pangolins in international trade between 1977 and 2019 as reported to CITES and estimated number of Asian pangolins in illegal trade in Asia between July 2000 and July 2019

Source: Adapted from Challender et al., see note 17 in this chapter.

trade has taken place since and between 2000 and late 2019 this involved, at least, the equivalent of an estimated 275,000 Asian pangolins (Figure 9.1).³⁵ This involved live and dead pangolins, scales and meat, sourced from across Asian range countries and all four species, and likely accounted for just a fraction of the actual illegal trade, recognising that an unknown portion of it goes undetected.

Based on the high levels of international trade in skins between 1975 and 2000 and concerns about the sustainability of harvest for this trade, Asian pangolins were included in the preliminary phase of the RST process in 1988, and then phase I in 1992 and phase IV in 1999. During each phase of the process, a detailed review and evaluation of the knowledge of the species' biology, threats and international trade was undertaken. The two earlier reviews concluded that populations of the species were thought to have declined in many areas because of over-harvesting, but the absence of population data meant that it was not possible to determine definitively the impact of trade on populations. Phase I of the RST process (1992) saw the introduction of time-bound remedial measures for species where international trade levels were deemed to be detrimental to their survival.³⁶

³⁵ Ibid.

³⁶ Reeve, *supra* note 11.

BOX 9.1 (CONT.)

Based on phase I of the RST process, a series of primary (to be implemented within thirty days) and secondary (to be implemented within twelve months) recommendations were made relating to pangolins and several parties. However, they focussed almost exclusively on more restrictive trade measures. For example, they included a request to parties to prohibit imports of Asian pangolin specimens from Thailand and Indonesia because the species are protected by national legislation in these countries, requested that parties (and some non-parties) be vigilant concerning international trade in scales, and requested that Singapore investigate the legality of imports and exports.³⁷

Despite implementation of these recommendations, high levels of (legal and illegal) trade continued, and this resulted in the inclusion of Asian pangolins in phase IV of the RST process in 1999. These reviews concluded that the species were subject to extremely heavy harvest pressure, which had caused major population declines in places, and that illegal trade levels far surpassed trade reported to CITES. Much of this illegal trade was destined for China. These reviews also documented extremely high levels of demand for pangolin meat and scales, in particular, in China, but provided little detail on demand (e.g., consumer characteristics or the nature of demand). The remedial recommendations formulated were again regulatory focussed. They included a recommendation to parties that no export or re-export certificates should be issued for Asian pangolins until, inter alia, the distribution and population status of the species had been assessed and adequate control measures and inspection procedures to detect illegal shipments of pangolins had been developed in range states.

While still subject to phase IV of the RST process, the species were also subject to a proposed transfer from Appendix II to Appendix I at CITES COP 11 in the year 2000.³⁸ As in the RST process, the listing proposal documented high levels of legal and illegal trade, in particular involving the Chinese and Sunda pangolins, and reported the aforementioned population declines. The proposal also recognised the very high levels of international demand for pangolins products (both meat and scales), particularly in China, but again provided no in-depth assessment of

³⁷ D. W. S. Challender and C. O'Criodain, 'Addressing trade threats to pangolins in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)' in D. W. S. Challender, H. C. Nash and C. Waterman, eds., *Pangolins: Science, Society and Conservation*, 305–20 (Academic Press, 2020).

³⁸ See CITES, Prop. 11.13, *Transfer of Manis crassicaudata, M. pentadactyla, M. javanica from Appendix II to Appendix I* (2000), <https://cites.org/sites/default/files/eng/cop/11/prop/13.pdf>, accessed 5 July 2022.

BOX 9.1 (CONT.)

demand (e.g., consumer profiles). There was also no attempt to analyse market dynamics for pangolin products. At COP 11, the parties added an annotation to the Appendix II listing for Asian pangolins stipulating that zero export quotas apply to commercial international trade in wild-caught specimens of the species – in effect, a proxy trade ban. In contrast, despite recognising high levels of international demand for pangolin meat and scales, the parties did nothing to address it directly. This is despite pangolin scales having been used in traditional medicines since at least the sixteenth century in China, a form of medicine that is used by hundreds of millions of people,³⁹ and recognition that the country was essentially dependent on imports of pangolin products.

Although the zero export quotas were designed to reduce international trade, evidence from seizure data (Figure 9.1) indicates that these measures have failed and illegal trade has continued. However, as this trade was not reported to CITES, it did not receive attention from the parties. Although the Chinese and Sunda pangolin were candidate species for the post-CITES COP 13 phase of the RST process in 2004, they were not selected because trade levels reported to CITES were negligible (Figure 9.1). In reality, the species were subject to ongoing illegal harvest for international trade and in demonstrable need of further conservation interventions to mitigate this threat, most obviously, measures to address consumer demand to complement efforts to control supply.

At CITES COP 17 in 2016, proposals were submitted to transfer Asian pangolins from Appendix II to Appendix I and to include the four African pangolin species in Appendix I.⁴⁰ These proposals were adopted, establishing a global ban on commercial international trade in wild-caught pangolins and their derivatives. It is too early to draw conclusions on the long-term impact of this measure, but in the short term it has failed to prevent illegal harvest and international trade in Asian pangolins in many places (Figure 9.1).

The parties also adopted Res. Conf. 17.10 on the *Conservation of and trade in pangolins*, which urges parties and other stakeholders to, inter alia, ensure that robust legislation is in place to deter illegal trade, build capacity among parties to address illegal trade, and implement measures to reduce demand for pangolin products traded illegally. This is arguably a step forward in addressing consumer demand, but there are various limitations to this approach. The call to reduce demand is contained within a resolution meaning that it is not legally binding on parties. The result has been that since 2016 several attempts have been made to generate knowledge of consumer demand for pangolin

³⁹ F. Cheung, 'TCM: Made in China' (2011) 480(7378) *Nature* S82–S83.

⁴⁰ See Challender and O'Criodain, *supra* note 37.

BOX 9.1 (CONT.)

products in key markets, noticeably China and Vietnam, and several programmes and campaigns have been implemented to try to influence consumer behaviour.⁴¹ However, these measures have mainly been implemented by non-governmental organisations, which are subject to funding constraints, meaning that attempts to influence consumer behaviour are often short-lived, campaigns frequently overlap with concurrent efforts and, ultimately, these efforts have had little success.⁴²

9.3 REFORMS TO CITES

While CITES is the principal mechanism through which international trade in wildlife is regulated, this critique and the case study on Asian pangolins demonstrate significant inadequacies to the current approach in terms of understanding markets for species included in the Convention. A reliance on CITES trade measures – and enforcement of the legislation underpinning these measures – has been demonstrably inadequate to prevent illegal and unsustainable harvest and trade in Asian pangolins over several decades. Although consumer demand was recognised in listing proposals relating to the species and the RST process historically, it was not considered in sufficient detail to inform potential interventions to influence consumer behaviour. And it was not until 2016 that the parties recognised the need to address consumer demand for these species directly. There are also limitations to recent efforts to influence consumer behaviour. Similarly, there has been no attempt to analyse markets dynamics for Asian pangolins and their derivative products either in listing proposals or in the RST process.

The Convention could more effectively regulate international trade in wildlife by the parties explicitly seeking to understand markets for wildlife products, including both supply and demand as well as prices for species and derivative products, and considering all relevant actors. This could be done by revising Res. Conf. 9.24 (Rev. CoP17) and requiring parties to include details on these factors in listing proposals, including analyses of market dynamics. As discussed, understanding market dynamics can provide critical insights into the likely effectiveness of trade measures. For instance, CITES trade measures can also lead to adverse impacts on species, so understanding how relevant actors (e.g., harvesters, traders and consumers) may

⁴¹ See G. Burgess et al., 'Changing consumer behavior for pangolin products' in D. W. S. Challender, H. C. Nash and C. Waterman, eds., *Pangolins: Science, Society and Conservation*, 349–66 (Academic Press, 2020).

⁴² Ibid.

respond is essential in evaluating the likely impact of proposed measures and reducing the uncertainty of listing decisions.⁴³

Based on these insights, the parties could devise interventions that will have the greatest likelihood of effectively regulating or restricting harvest for international trade. This may or may not include typical trade measures. Research indicates that social marketing and behaviour change programmes are more effective at influencing consumer behaviour than purely regulatory measures.⁴⁴ As such, where tighter regulation of trade may lead to adverse impacts on species (e.g., by signalling scarcity to organised crime groups, which could ultimately lead to accelerated wild harvest), the most appropriate intervention may be to focus only on influencing consumer behaviour (i.e., without adopting other trade measures). This would need to be in a way that overcomes recognised limitations by ensuring that interventions are evidence-based and sustainably funded in the long term.⁴⁵ Alternatively, the most appropriate intervention may be commercial captive-breeding of species where demand is persistent and consumers prefer, or would accept, products from this source, though there are several other factors that warrant consideration as well.⁴⁶ Then again, the solution may be typical trade measures (i.e., the inclusion of species in Appendix I or II), which may or may not be used in combination with the aforementioned measures and/or a range of other potential interventions. Critically, however, based on insights generated from understanding market dynamics and actors, the interventions to be implemented should only be used if they will be likely to contribute to, and not undermine, the conservation of species, and tools including theories of change should be used to identify risks and reduce the uncertainty of decisions.⁴⁷

For species that are already listed in the Appendices, the parties could monitor supply (as they currently do) but also consumer demand and prices for species, and periodically review the effectiveness of interventions to ensure that they are resulting in the intended outcomes. Adaptive management could be used to amend interventions where needed to achieve outcomes. The parties could do this through national wildlife consumption surveys to capture trends in the procurement and consumption of CITES-listed species (e.g., sales volumes, prices and consumer profiles).⁴⁸

⁴³ Cooney et al., *supra* note 19.

⁴⁴ S. Phillip et al., 'Is legislation a barrier to the sustainable management of game species? A case study of wild deer in Britain' (2009) 52(8) *Journal of Environmental Planning and Management* 993–1012; Roe et al., *supra* note 13.

⁴⁵ D. Verissimo and A. K. Y. Wan, 'Characterizing efforts to reduce consumer demand for wildlife products' (2019) 33(3) *Conservation Biology* 623–33.

⁴⁶ D. W. S. Challender et al., 'Evaluating the feasibility of pangolin farming and its potential conservation impact' (2019) 20 *Global Ecology and Conservation* e00714; M. 't Sas-Rolfes and D. W. S. Challender, 'Evaluating the impact of pangolin farming on conservation' in D. W. S. Challender, H. C. Nash and C. Waterman, eds., *Pangolins: Science, Society and Conservation*, 517–27 (Academic Press, 2020).

⁴⁷ Cooney et al., *supra* note 19.

⁴⁸ Challender et al., *supra* note 8.

This could capture current and emerging markets and products, for example the novel market channels developed for rhinoceros horn in the early 2010s.⁴⁹ Appropriate methods could be used to collect data on illegal trade,⁵⁰ including that which takes place online. This could be conducted by the parties within a standard format and be reported to the CITES Secretariat; the data could be maintained by the CITES Secretariat, much like the reports on legal and illegal trade. This would allow for the impact of CITES trade-related interventions to be evaluated on an ongoing basis and these data could feed into processes such as the RST and mechanisms to review the status of, and trade in, Appendix-I listed species.⁵¹ Analyses of trade dynamics, market dynamics, all relevant actors and the broader social-ecological systems in which the harvest and international trade in particular species takes place could be used to determine whether additional or alternative interventions are needed to avoid the over-exploitation of species for international trade; those further interventions could subsequently be implemented where needed.

9.4 CONCLUSION

The goal of CITES is to regulate international trade in wildlife, but while parties monitor supply they inadequately consider consumer demand, prices for wildlife and market dynamics in listing decisions and for listed species. Consumer demand can be complex; thus, a failure to understand it and associated market dynamics (including price trends) and to consider these factors in making decisions and implementing interventions can result in ongoing and illegal detrimental harvest and international trade in species the Convention was designed to protect. Asian pangolins exemplify this concern, as a reliance on enforcement of the legislation implementing CITES in range countries has demonstrably failed to prevent illegal and unsustainable harvest and trade in the species over several decades. It is argued that CITES could more effectively regulate international trade in wildlife if the parties were to seek to understand the markets for wildlife products, including supply and demand and prices for species, and to consider all relevant actors, both in future listing decisions and through periodic reviews of the effectiveness of interventions. This would enable tailored interventions to be devised and adaptive management to be used to achieve stated outcomes. In a world of rapid economic and social change, generating a comprehensive understanding of markets for wildlife to inform the most appropriate interventions is essential to preventing the over-exploitation of species for international trade.

⁴⁹ See Biggs et al., *supra* note 16.

⁵⁰ A. Nuno and F. A. V. St. John, 'How to ask sensitive questions in conservation: A review of specialized questioning techniques' (2015) 189 *Biological Conservation* 5–15.

⁵¹ CITES, Decision 18.28, 18.28–18.29 *Appendix-I Listed Species* (n.d.), <https://cites.org/eng/dec/index.php/42025>, accessed 5 July 2022.