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Understanding markets to conserve trade-threatened species in CITES

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ABSTRACT

International trade in wildlife is a major threat to biodiversity conservation. CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, is the primary mechanism for maintaining sustainability in international wildlife trade. Although a comparatively well-designed legal instrument, CITES has been criticised because of its emphasis on regulatory measures and disregard for the economic reality of wildlife trade. Through means of a case study on the trade in pangolins (Pholidota: Manidae) in Asia, we evaluate the CITES approach to controlling trade and demonstrate significant areas to be addressed. These arise because CITES fails to accurately monitor supply, particularly where trade is illegal, it fails to consider the impact of trade controls in realistic terms, and it does little to consider the complex nature of demand or contend with changing market dynamics. To more effectively manage trade we argue that reforms are needed within CITES. Specifically, we highlight improved monitoring of supply (by accounting for illegal and legal trade) and of demand and prices for wildlife (through national wildlife consumption surveys). This information would generate a more holistic understanding of wildlife trade and, if integrated with the Convention's existing trade database, would allow a more realistic evaluation of the performance of trade controls, and could inform decision-making and the implementation of interventions which go beyond regulation and address demand directly. In a world of rapid economic and social change understanding markets and addressing demand as well as supply is essential to conserving the world's trade threatened species.

1. Introduction

International trade in wildlife is a major threat to biodiversity conservation (Broad et al., 2003; Sutherland et al., 2009) and can diminish species' populations, cause extirpations, and ultimately threaten ecosystem function (Challender et al., 2015; Duckworth et al., 2012; Smith et al., 2010). It is of serious concern to policy-makers at present as a result of rising demand for traditional Asian medicine, luxury foods and curios, among other trades (e.g., pets), and current laws and regulations are increasingly being by-passed (Challender and MacMillan, 2014; Natusch and Lyons, 2012; Rosen and Smith, 2010).

CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, which entered into force in 1975, is the primary mechanism for controlling international wildlife trade (CITES, 2014a). It seeks to ensure that international trade does not threaten the survival in the wild of c.35,000 species (CITES, 2014a). It relies on precise and specific regulatory measures including trade bans (3% or 931 species are listed in Appendix I) and controls (96% or 34, 419 species are listed in Appendix II and < 1% or 147 species are listed in Appendix III), which are established following an assessment of species' extinction risk, and the subsequent monitoring of trade levels (CITES, 2014a; Wijnstekers, 2011). It is implemented by member states (known as Parties, currently numbering 181) through a system of permits, national legislation and enforcement mechanisms, and nominated national agencies (CITES, 2014a).

Although CITES has had successes in species conservation terms, it has also been criticised because it disregards the economic reality of wildlife trade and its broader socio-economic and cultural drivers (e.g., Challender et al., 2015; Challender and MacMillan, 2014; Cooney and Abensperg-Traun, 2013; Roe et al., 2002). Controlling trade requires understanding markets, including supply (e.g., species abundance, production and trade volumes) and demand (e.g., consumer preferences, demand elasticity and social norms surrounding consumption) and how these forces interact (e.g., price and market structure), and crucially, how they can be influenced and respond to different interventions (e.g.,

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Phillip et al., 2009; Damania and Bulte, 2007; Dickson, 2003). Yet, while CITES has recognised the economic nature of trade and its broader complexity (e.g., Res. Conf. 13.2, Rev. CoP14; Res. Conf. 16.6; see Challender et al., 2015), these factors are typically excluded from decision-making (e.g., listing species in the Appendices), monitoring, and implementation, which remain focused on trade controls (Mathur, 2009; Abensperg-Traun, 2009).

Although supply is monitored, the process is impeded. This is partly because population data are lacking and go uncollected for many listed species (Parsons et al., 2010; Phelps et al., 2011; Abensperg-Traun et al., 2011) but it is also because CITES efforts exclude illegal trade (with few exceptions, e.g., elephant ivory – see Res. Conf. 10.10, Rev. CoP16), but which is estimated to be worth USD20 billion a year globally and involve large volumes of many taxa (Challender et al., 2015; South and Wyatt, 2011; Rosen and Smith, 2010). Moreover, despite trade controls being used to regulate supply, the impact of these measures is only tangentially considered in decision-making (see Res. Conf. 9.24, Rev. CoP16). Yet, in some cases these measures have stimulated trade (e.g., Rivalan et al., 2007; Courchamp et al., 2006), sent it underground (e.g., Rosen and Smith, 2010; Underwood et al., 2013), and increased prices for wildlife products (e.g., 't Sas-Rolfes, 2000; MacMillan and Han, 2011), and which have resulted in adverse impacts on the conservation of listed species (e.g., Rivalan et al., 2007; Leader-Williams, 2003).

Crucially, CITES also operates in a manner that fails to adequately understand or address demand (see Res. Conf. 9.24, Rev. CoP16), but which may be characterised by complex socio-cultural factors, and which can undermine trade controls (e.g., Biggs et al., 2013; Underwood et al., 2013; Rosen and Smith, 2010). Similarly, the Convention does not contend with changing market dynamics, which may be signalled by rapid price movements (e.g., sharp increases in retail prices for rare species; Hall et al., 2008), and which may herald an extinction crisis for certain highly protected species (e.g., Brook et al., 2012; Ferreira et al., 2012; Courchamp et al., 2006).

Here, we critically – and constructively – evaluate the CITES approach to controlling trade through means of a case study on the trade in pangolins (Pholidota: Manidae) in Asia, and suggest reforms that would enable the Convention to more effectively govern international wildlife trade. Specifically, we analyse CITES trade data and seizure data on pangolins in Asia and review actions taken within the Convention to control trade in Asian pangolins in order to evaluate the effectiveness of these actions. We then present analyses of price data and contemporary demand for pangolin products to demonstrate the utility of understanding markets to informing trade interventions which go beyond regulation of supply. We then suggest reforms that we argue would enable CITES to more effectively control international wildlife trade.

2. Case study background: pangolins in Asia

Pangolins are insectivorous mammals covered in epidermal scales. Four species occur in Asia, the Chinese (*Manis pentadactyla*), Sunda (*Manis javanica*), Indian (*Manis crassicaudata*), and Philippine pangolin (*Manis culionensis*), and which are collectively distributed from Pakistan east through southern China, and south throughout the Indian sub-continent and much of Southeast Asia (Kingdon et al., 2013; Challender et al., 2014a, b). Historically, they have been exploited locally for a range of consumptive uses (e.g., as a protein source, a 'tonic' food, and an ingredient in traditional Asian medicine), most conspicuously in China (Wu et al., 2004; Wu and Ma, 2007), but also for international trade (Fig. 1; Herklots, 1937; Harrisson and Loh, 1965). Understudied, they are also difficult to census, and with few exceptions (e.g., Wu et al., 2004) there is a lack of quantitative data on populations (e.g., Challender et al., 2014a, b). However, it is understood that populations in China were commercially extinct by the mid-1990s, and which has since been dependent on imports, mainly from Southeast Asia (Fig. 1; Wu et al., 2004; SATCM, 1996). This has driven regional trade dynamics with international trade being substituted for local use in many areas (e.g., MacMillan and Nguyen,

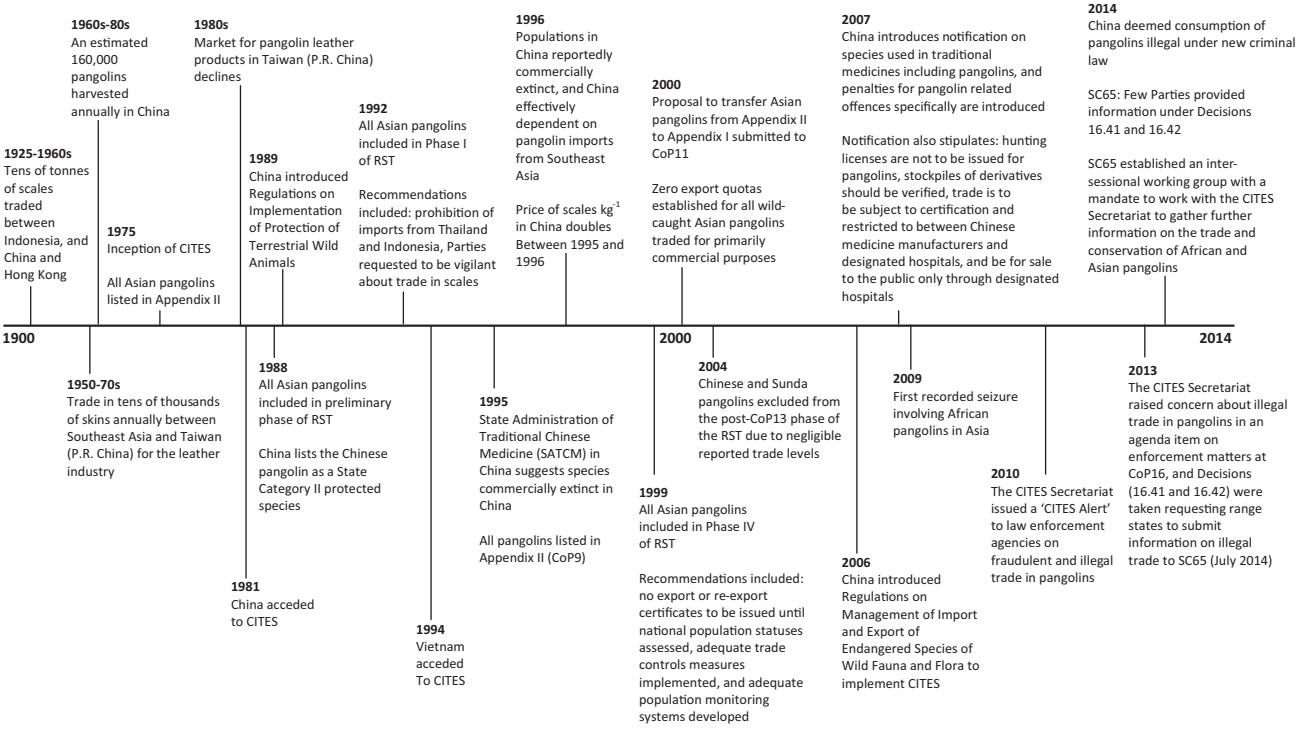

Fig. 1. Selected Asian pangolin trade and CITES timeline.