

Culture, Conservation and Crime: Regulating Ivory Markets for Antiques and Crafts

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Abstract

The illegal trade in wildlife is worth around one-third of the legal global trade of \$22.8 billion. The largest consumers of the illegal trade being China, the US and EU and the most lucrative specimens being traded are elephant ivory, rhino horn and tiger bones as well as birds and reptiles. The conservationists' warnings of wild population decreases to the point of near extinction has led to 181 countries ratifying the Convention on the Trade in Endangered Species (CITES). Hailed as "the Magna Carta for Wildlife", CITES subject wildlife imports to mandatory licensing and incorporates a "banned list" of prohibited species and a "controlled list" list of species.

Within the EU, ivory can only be sold under certain conditions. It is generally forbidden to use listed ivory for commercial purposes. However, sale of listed ivory is permitted if the intended use is non-commercial in nature and in addition to this exemption there is an antiques derogation that means "worked" ivory specimens acquired before 1 June 1947 do not require a certificate for sales within the EU. Given the absence of reliable unambiguous non-invasive scientific provenance testing of crafted ivory a market for illegal ivory exists.

Despite seemingly robust legislation controlling ivory sales (including export permit requirements for UK sales abroad) and that fact that synthetic ivory can now be created to the same diagnostic standards as genuine ivory, selling at a fraction of the cost, the demand for the 'real thing' in antiques continues to rise. Moreover, there is evidence to suggest that some antiques dealers are using this possibility to their advantage by passing off real (illegal) ivory as synthetic and indeed vice versa when they come to sell it. This paper presents a pragmatic and accessible legal and economic analysis of some available regulatory options to combat illegal ivory trading in the UK.

Key words: ivory, antiques, craft, regulation, poaching

1. Introduction

Crafted ivory features in many cultural artefacts such as musical instruments (e.g. violin heels, piano keys) and also in sculpture, jewellery, ornaments and other works of art. Ivory also substantially features in the wildlife monitoring network TRAFFIC estimate of the illegal trade in wildlife products. This trade is considered to be worth around one-third of the legal trade of \$22.8 billion, which would equate to a value of between \$7.6 and \$8.3 billion a year¹. The largest consumers of the illegal trade being China, the US and EU and the most lucrative specimens being traded are elephant ivory, rhino horn and tiger bones as well as birds and reptiles.

The conservationist warnings of wildlife population decreases to the point of near extinction has led to 181 countries ratifying the Convention on the Trade in Endangered Species (CITES). Hailed as “the Magna Carta for Wildlife” (Layne 2012), CITES subject wildlife imports to mandatory licensing and incorporates a banned list of prohibited species set out in its Appendix I and a “controlled list” list of species (Appendix II). The Convention was established to be implemented through Member Countries national laws with each Member Country being tasked with reporting data back to a biennial CITES conference.

The UK, a founder member of the Convention, first legislated to give effect to CITES with the enactment of The Endangered Species (Import & Export) Act 1976. This initial statute has been substantially amended and is now largely superseded by European Regulations. The Control of Trade in Endangered Species (Enforcement) Regulations 1997 (COTES) make provision for enforcement of the European Regulations and this is an evolving instrument and frames the legal regulations with which UK sellers of ivory must comply². While COTES regulates trade offences once the species has entered the UK, the Customs and Excise Management Act 1979 ("CEMA") covers the illegal import

¹ Traffic.org website, "About - Wildlife trade", <http://www.traffic.org/>

² Council Regulation (EC) No. 338/97 art. 4.1 and 4.2

and export of CITES species³. The current regulations state that for ivory to be legally exported or imported from or into the EU, an export and import permit is required from the designated (CITES) Management authorities of the export and import countries. These permits act as proof that the ivory was legally acquired and that the trade should not be detrimental to the survival of the species.

This study serves to assess the regulatory context and options available to curb the activity in illegal ivory markets ranging from permissive to more prohibitive options. The paper is organized in the following manner. The next section considers the role and legal status of ivory within the antique trade. In section 3 some UK cases are then briefly examined to illustrate the limited efficacy of the current legal position in the UK in bringing about a substantial number of prosecutions for illegal ivory trading. The following section helps account for this limited success by establishing the range and complexity of the illegal sub-markets in ivory. Section 5 evaluates the range and applicability of various regulatory policy instruments ultimately seeking to help secure elephant populations in the face of an escalating recent onslaught of poaching activity. The final section offers summary and concluding remarks.

2. Ivory and the Antiques Trade

Within the EU, ivory can only be sold under certain conditions. It is generally forbidden to use Annex A-listed ivory for commercial purposes⁴. However, sale of Annex A listed ivory is permitted if the intended use is non-commercial in nature and in addition to this exemption there is an antiques derogation that means “worked” ivory specimens acquired before 1 June 1947 do not require a certificate. The regulations state that specimens will be considered as worked if they are significantly altered from their raw state for jewellery, adornment, art, utility, or musical instruments, and need no further carving, crafting or manufacture ‘to effect their purpose.

³ Magistrates’ Court Sentencing Guidelines: Sentencing for Wildlife Trade and Conservation Offences, November 2002.

⁴ Council Regulation (EC) No 338/97 (OJ No L 61, 3.3.97, p. 1

“Worked” specimens acquired before 1947 can be used commercially without being covered by a commercial use certificate. However, the regulation also states that specimens can only be considered “worked” if they are significantly altered from their raw state for jewellery, adornment, art, utility, or musical instruments AND need no further carving to effect their purpose. It is, however unlawful to sell 'unworked' specimens of any date (e.g. a whole, uncarved elephant, tusk).

Most antiques, enjoy this “worked item” derogation exemption from the CITES regulations however, dealers and auctioneers need to be very clear about the law when they take in for sale or sell an ivory items as the timing of the working of an item is vital. Take as an example an ivory billiards ball made in 1900. As it was significantly altered from its original state (a raw tusk) to make the ball many years before the cut-off date of June 1947, it can therefore be legally sold within the EU without the need for a CITES certificate. The billiards ball would still come within the derogation if it had been re-carved, for example to make a walking stick handle, before June 1947. However, if the re-carving had been done after that date, it would be outside the derogation and need a CITES certificate from the department of Animal Health's Wildlife Licensing and Registration Service⁵. In May 2013, significant changes were introduced following new guidance from the European Commission on the interpretation of the "worked item" derogation and since then the "worked item" derogation does not apply to the import or export of items outside the EU. Anything sent by a UK antiques dealer to a buyer outside Europe will require an export permit. Dealers have reported their confusion at the regulations as to the “worked item” derogation and leading UK solicitor, Andrew Banks of law firm Stone King who advises members of the antiques trade on CITES requirements has criticised DEFRA on its “wholesale failure” to make the trade properly aware of changes to the CITES regulations⁶.

In addition to COTES, ancillary legislation exists in the UK which, while not directly relevant to the illegal wildlife trade, is linked to it. The Proceeds of Crime Act 2002 and the Serious Crime Act 2007

⁵ Endangered Species, The Antiques Trade Gazette (2013)

⁶ Arkell, R. The Antiques Trade Gazette, Issue 2198, 1-3 (2015)

address offences which have been shown to facilitate the illegal wildlife trade, such as money-laundering.

Despite the seemingly robust legislation and regulations controlling the sale of ivory and that fact that synthetic ivory can now be created to the same diagnostic standards as genuine ivory (Sims, Baker and Hoesch 2011) and selling at a fraction of the cost, the demand for the “real thing” continues to rise. Moreover, there is evidence to suggest that dealers are using this to their advantage by passing off real (illegal) ivory as synthetic and indeed vice versa when they come to sell it.

As a consequence of these various rules, constraints and uncertainties the legal auction price of crafted ivory over the last six years has proved fairly volatile. In large part this may be due to fears of post-auction revelation of illegal provenance with subsequent value diminution. This is illustrated by the hammer price of legally traded crafted ivory *netsuke*⁷ in London auction houses over the period 2010-2016 (see Table 1). While data points are in nominal terms and individual items are not always directly comparable because of some differences in crafting and provenance, they nonetheless suggest considerable volatility over the data period.

3. UK Cases

It is strange fact given the scale of the market that there have been very few prosecutions for trading in illegal ivory in the UK. Indeed, the Home Office’s own data shows only 14 convictions since 1992. However, this may not give a full picture of CITES offences. CITES offences are notifiable to the Home Office for statistical purposes. However, statistical analysis of those offences under CITES is not possible as CITES offences have not been allocated a specific code and are, therefore, recorded under the general Home Office code "999/99 Other crime or record only entry not catered for elsewhere" (Environmental Audit Committee 2012). In addition, as CITES offences are tried either in

⁷ These are carved button-like ornaments worn in historical dress in Japan to suspend articles from the sash of *kimono*.

the Magistrates Court or the Crown Court they are not “reported” and so do not appear on legal databases.

There has been a recent high profile case however which involved prosecution of an auctioneer in October 2014, when Chiswick Auctions were fined £3,200 in Ealing Magistrates Court for the sale of a carving made from ivory that came from an elephant killed during the 1960s. The successful prosecution followed an investigation by the Wildlife Crime Unit and Arts and Antiques unit officers during an on-going operation against modern ivory sales in London. Officers had discovered and seized the object from a Portobello Road Market dealer and their investigations tracked the item, catalogued as “an antique carved ivory tusk worked as a train of elephants” back to Chiswick Auctions. The auction house’s records showed that it had gone under the hammer for £100. Although, the auction house pleaded guilty to the offence on October 14th 2014, stating that a senior auctioneer had made a mistake in the age of the item, Chiswick Auction’s Managing Director, William Rouse spoke after the verdict of his shock at the size of the penalty “for an isolated incident that earned the auctioneers commissions of around £40” and that he believed the auction house had been “harshly treated in response to a cause célèbre” finally stating that "a huge amount of public money has been spent on this matter but to what end? We are still permitted to sell antique ivory and what has it taught us apart from the need to be even more vigilant in a situation where every auction room in the land treads a difficult line?" (Arkell 2014). While Mr Rouse’s attitude may not be shared by all of his fellow antiques professionals, dealers are quick to point out that while they find illegal elephant poaching abhorrent they also consider the legislative rules and regulations confusing and difficult to follow.

Another recent case involved Sally Wilkinson of Chanticleer Antiques, who was charged with the sale of an ivory carving of a nude figure that police believed had been worked after June 1947. The prosecution did not date the article definitively, as it was not sent for forensic dating analysis, but proceeded on the basis that it was up to the defendant to prove it was carved before 1947. The case

was sent from Hammersmith Magistrate's Court to Isleworth Crown Court. The judge described placing the burden of proof on the defendant as "a bridge too far"⁸. The prosecution, however, had already decided to withdraw the case.

What is clear from both of these cases is the need for a process to be in place to identify the age of ivory accurately. Both raise questions about where the burden of proof lies in such cases - something which needs to be a clearly established principle.

What is certain is the fact that currently little is known about the extent of trading in illegal ivory in the UK. Despite the set of legislation at the law enforcers' hands, convictions seem to be few. This may be due to a variety of factors, including *inter alia*, a lack of resources available to the police and Border Force, a "soft" attitude by the judiciary or a lack of specialist knowledge. Alternatively it may be that the scale of the problem is already known but not easily identified.

4. Disentangling the Illegal Market for Ivory

The legal and trade context outlined above highlights the active functioning of a number of different illegal sub-markets for ivory and in which different mixes of regulatory policy instruments are likely to be appropriate. For the design of policy prescriptions and choice of regulatory instruments along the global supply chain then these illegal sub-markets may potentially be combined into two broad categories:

Category 1: *Newly poached ivory* – to make new craft items (openly to criminally complicit consumers or passed off as synthetic when suppliers and consumer know this is not so, or passed off as "ox bone" craft items (as may be found on *eBay*), or treated to make it appear old (pre-1947) with a view to making a sale on the legitimate antique market.)

⁸ Antiques Trade Gazette, Asking Portobello dealer to prove age of ivory carving is "a bridge too far" says judge, 25 November 2014, <http://www.antiquetrade gazette.com/news/2014/nov/25/asking-portobello-dealer-to-prove-age-of-ivory-carving-is-a-bridge-too-far-says-judge/>.

Category 2: Post 1947 existing ivory craft items or ivory for crafting (passed off as pre-1947 or as ox bone)

Newly poached ivory

For category 1, while CITES remains in place all international trade is illegal on conservation grounds. Thus the only testing required is to identify whether a horn has been treated to appear to be pre-1947 horn. Such tests do exist and expert visual assessment can also be deployed to identify such artificial ageing.

From a legal, economic and ecological perspective it is a legitimate question to consider whether lifting the CITES international ban would stoke demand for new ivory or would it actually serve to reduce the incentive to poach by depressing market price, given a greater supply of ivory would legitimately come onto the market. Some consideration of this question is warranted, particularly as the *status quo* is characterised by a huge increase in poaching incidents and with wilderness areas, national parks, game reserves and conservation agencies in the main elephant hosting countries having very little revenue to protect herds beyond domestic sales⁹ from natural mortality and active conservation management. If demand is stoked substantially then trading will accelerate the path towards species extinction and even earlier sub-species extinctions. If the market price is depressed it may still only reduce the poaching effort expended for a relatively short time period. This is because in the longer run stocks of ivory will deplete given long reproduction cycles within elephant herds. Thus the replenishment rate to stocks may well be insufficient to meet even stable demand.

Making matters worse, however, we know that any price reduction effect is strongly subject to the usual *ceteris paribus* condition of stable demand. Unfortunately, we know that consumers strongly value authentic ivory over substitutes such that demand is probably highly inelastic. Further there

⁹ One might also observe that domestic sales in most countries where there are substantial elephant herds (e.g. Central and Southern Africa) are not likely to be supporting 'immediate domestic use', but rather are either held as speculative assets contingent on future CITES international trade ban lifting, or are held with a few to effecting illegal international smuggling (contravening CITES) in the near future to exploit high ivory price markets in East Asia and elsewhere.

are rising real incomes and populations in China, Thailand and Laos such that market demand is growing (shifting rightwards) and that this growth is likely to be persistent. This means that lifting the CITES trade ban may not even lead to a significant price dip and could even coincide with price rises. Accordingly one cannot in any way confidently expect that on its own the simple act of lifting the CITES ban will automatically lead to lower poaching effort being expended and less elephants being slaughtered. Such simplistic thinking has been characterised by Ostrom, Janssen and Anderies (2007) and Ostrom and Cox (2010) as a “panacea problem”. By this is meant “...a tendency, when confronted with pervasive uncertainty, to believe that scholars can generate simple models of linked social–ecological systems and deduce general solutions to the overuse of resources.” [p1. Ostrom et al 2007]. One such ‘simple’ solution advanced has been to just permit legalized trading of ivory.

Past studies in the economic analysis and regulation of endangered species product markets have long entertained the possibility of some limited legalized trading in ivory to (i) provide some incentives for the sustainable management of elephants and (ii) on the demand-side to provide ivory users some access to limited supplies in order to reduce the incentive to push further underground a trade with smuggling and black market aspects (Barbier *et al* 1990, Bergstrom 1990). To combat such black market activity underpinned by wildlife poaching Kremer and Morcom (2000) advanced a solution predicated on the accumulation of a public stockpile of storable wildlife commodities. This would then enable the relevant government to threaten to dump them on the market if the extant population of the poached wildlife fell below a certain level. Essentially this might be labelled a time-consistent stockpiling policy. A similar line of thinking was also articulated in the specific context of the conservation of black rhino (Brown and Layton (2001). Focussing more generally across all endangered species goods Fischer (2004) set out a simple model to explore whether limited legalized trade in otherwise illegal goods can be helpful for achieving policy goals like reducing poaching. Institutional and biological considerations were not really accorded any scrutiny in that economic analysis.

For both ivory and rhino horn the key policy actors did, however, enact and sustain an outright ban via an 'Appendix 1' listing in the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) in 1973 and 1989. Stiles (2004) recorded how this led to unsustainably large elephant herd sizes in some Southern African countries alongside an inability to use the proceeds from ivory sales and sales of other by-products to directly finance conservation efforts. Hence, these countries continued to argue for the ban to be lifted. The possibility of this large herd size result for elephants was the subject of some earlier formal economic conjecture (Bulte and van Kooten 1996) but nevertheless, wildlife poaching of both elephants and rhinoceros has continued apace with black rhino pushed to 'critically endangered' status and white rhinos deemed to now be 'conservation dependent'. Stockpiles of ivory and rhino horn have, however, been accumulated across various Southern African countries and there is now much popular press and academic discourse calling for the lifting of trade bans in the face of continuing high levels of poaching. This pressure is perhaps also linked to the timing and location of the next meeting of CITES. This is scheduled to take place in Johannesburg, South Africa in September, 2016.

Notwithstanding that upcoming CITES meeting and in the aftermath of a huge increase in elephant and rhino poaching incidents in Central and Southern Africa in recent years, increasingly the emphasis of work on policy options has been on a need to change tack and try different policy solutions. This is the current context given that maintaining the business-as-usual regulatory and policy context does not seem able to adequately obstruct the path towards sub-species and eventually species extinction. More recently Biggs *et al* (2013) argued for the necessity of such a radical proposal in tandem with some measure of regulatory activity harnessing existing technology able to discern the provenance of the rhino horns. The intention is to help obstruct 'laundering' of illegal ivory/rhino horn and the practice of illegal trading. Arguably this and other work is overly confident on the scope for relying on technology in isolation to resolve the poaching problem and neglects consideration of the basic organizational architecture and market institutions that would need to evolve to support sustainable trading. These and some other points were set out in a short

response to that work (Collins, Fraser and Snowball 2013) and subsequently expanded in Collins, Fraser and Snowball (2016).

That work seems to raise many awkward questions for regulatory design rather than provide comprehensive answers supported by clear direct evidence. Furthermore, the setting of that work has already been somewhat overtaken by events. Following a court judgement in late November 2015 (BBC News 2015), South Africa has now lifted the ban on the domestic trading of rhino horn in South Africa overturning a moratorium on the trade imposed by the South African Government in 2009. This decision has potentially strong repercussions for ivory trading elsewhere in Central and Southern Africa. This legal judgement was founded on two reasons, namely, lack of public consultation before the ban was invoked and a failure to stem the poaching crisis with the ban in operation.

The reasoning for the judgement is open to question given that public consultation is clearly not always clearly present in all other examples of such public decision-making in South Africa. Furthermore, the implied legal explanation for the poaching crisis (i.e. lack of public consultation and high levels of poaching in the post-ban period) seems overly simplistic set against the more nuanced and multidimensional reasoning offered in Collins, Fraser and Snowball (2016).

Post 1947 existing ivory craft items or ivory for crafting

For category 2 ivory there are discernible attempts to pass off as pre-1947 ivory and also to pass off via e-bay and other distribution channels as 'ox bone'. The term 'ox bone' has become a generally understood code for ivory to bypass trading sanctions. Consumers of ox bone items would likely be very dissatisfied if they actually received ox bone and would likely not rate the supplier highly on eBay. This would impact on their trading reputation and business longevity. Perry (2014) notes that eBay 'banned' all ivory sales after an investigation by the International Fund for Animal Welfare exposed how 2,275 elephant ivory items were sold in a single week in 2007. However, sellers bypass

the ban by using the label of ox bone or other terms. If ox bone trading was banned then another term or label would doubtless emerge to skirt round any eBay regulations. Further, even if all antique trading was banned on eBay other trading sites would inevitably emerge to meet the demand for such a trading market to operate.

5. Regulatory Context and Regulatory Instruments

In considering how to address illegal ivory trading there are a number of regulatory options but the ambit and scope of their applicability is predicated on the relevant institutional, jurisdictional, ecological and geographical context as well as a number of mundane practical concerns.

Investigations of eBay for category 2 illegal ivory trading can be done by trade inspectors and police using *agent provocateur* and 'sting' tactics but this would need to be done continuously or with major resource –intensive large scale operations to have a discernible impact. Actually selling ox bone would reveal some buyers identities who might be frightened into refraining from subsequent illegal purchases via warning letters. Hitherto, no such attempts have been made via this warning letter approach though it has been tried in the context of music and film internet piracy with relatively little success (Green 2014).

In terms of category 1 illegal ivory sales we know that after the 1989 CITES international trade ban that the overall population of elephants in the African continent substantially increased. Despite this outcome, analysis of elephant population data over the period 1979-2007 shows that within some 37 African countries elephant numbers were still being lost. Lemieux and Clark (2009) suggest that this is largely explained by the degree of regulatory efficacy. Within these 37 countries there was deemed to be present (despite CITES) what effectively comprise unfettered and unregulated ivory markets. Their presence eases the conduct of both illegal domestic and international trading. As such in accordance with the standard Becker supply of crime model (Becker 1968) merely announcing the imposition of a full trade ban will not guarantee full compliance. To support such a

ban there must also be strong enforcement resources visibly present else a low probability of arrest and conviction is signalled and factored into criminal decision-making. In turn this leads to a higher expected rate of return from poaching and thus more poaching effort expended.

It is straightforward to advance plausible reasons for why regulatory laxity in this specific environmental context may be found. First, all of these 37 countries are 'less developed countries' with low GDP per capita, high infant mortality, low school enrolment and in many cases nutrition and food security issues. Against such a macroeconomic backdrop, public spending for wildlife protection may not be given the priority it deserves, particularly when looking from a more global environmental resource conservation perspective. Accordingly, international cooperation and resource transfers are necessary (though not sufficient) to reduce poaching and reverse elephant population decline in the short to medium term. Secondly, institutional quality matters. Many of these countries feature what Acemoğlu and Robinson (2012) would describe as weak or eroded institutional quality typified by democratic deficiencies, high levels of political, public and corporate corruption, weak oversight of public expenditure disbursement, a small and diminishing tax base and low trust in police and judicial processes.

In this context illegal trading is more readily able to be sustained. Institutional quality also has a direct bearing on the willingness to monitor elephant killings and to help track illegal trading as mandated by CITES¹⁰. This provides baseline information and local statistical data to inform any targeted regulatory enforcement.

These general regulatory imperatives condition the geographical applicability of any specific regulatory policy instrument. For example, as Bennet (2015) discusses in the context of the potential establishment in some circumstances of controlled legal trading in ivory, robustly credible and transparent systems (to obstruct potential governmental corruption) would need to first be set in

¹⁰ <https://cites.org/eng/prog/etis/index.php> and <https://cites.org/eng/prog/mike/g/eng/prog/mike/>

place. Only then might it be possible to firmly guarantee that ivory from illegally killed elephants could not be laundered on any legal market.

One of the circumstances under which controlled legal ivory trading might be permitted is in the context of allowing episodic or 'one off' trades of illegal ivory seizures or ivory from natural mortality and active conservation management. The rationale here is that such trades might help provide revenue to finance conservation effort. Again robust and transparent systems would need to already be in place to detect attempts at laundering ivory sourced beyond seizures, natural mortality and conservation management. Similarly transparency is needed to ensure that the resultant revenues are manifestly directed to supporting conservation efforts and not enriching participants in corruption.

Advocates of such episodic or one off sales have not remained unchallenged. In large part this relates to understandable conservationist antipathy to effectively buttressing the supply chain serving previously (and potentially contemporaneously) illegal consumers. Elements of this supply chain comprise people with links to, or actual members of, criminal syndicates and rebel militias (engaged in many other criminal markets and enterprise). As such for some conservationists it is highly distasteful and potentially dangerous to tacitly or explicitly work with them, as it proffers some measure of respectability on such individuals. It should be noted that fighters of the 'Lord's Resistance Army' (LRA) were identified and formally sanctioned by the United Nations Security Council in 2014 for illegal hunting and ivory trading, especially in central Africa.

More fundamental policy and operational objections to such trades relate to their possible undesirable economic effects, which have prompted some countries to publicly burn or crush seizure stockpiles (see Zane 2016) in the full glare of media scrutiny. Scriber (2014) contends that these undesirable economic effects arise from confusion about the prospect of more one off legal ivory trades. He argues that this has helped to boost speculative poaching motives, thus sustaining relatively high black market prices and encouraging high levels of actual poaching effort. Suggesting

such a direction of causality is an entirely legitimate and logically plausible assertion. Ideally this would be subjected to independent empirical scrutiny but inevitably such a task is hindered by black market prices series not being readily available. It also remains plausible that game farm and hunting lobbyists as well as government corruption might also try to raise the frequency of such one off trades such that they occur even when they are not biologically warranted. Such charges have also been levelled against Zimbabwe in the context of legal (under CITES) stock export sales justified on the basis of guarding against elephant overpopulation, even when population estimates have been strongly disputed (Teagle 2015).

With the CITES *status quo* in place for both category 1 and 2 illegal sub-markets and assuming willingness for reasonable international cooperation and strong institutional quality in place, a mix of more narrowly focussed regulatory policy instruments can be actively considered at various points of intervention along the illegal supply chain. Applied singularly they are unlikely to prove effective in arresting the decline of elephant numbers and avoiding species extinction. Some of these policy instruments are considered below.

Improved cross country intelligence gathering on the criminal gangs is clearly vital but in terms of addressing on-the-ground poaching one immediate measure that is being undertaken in some country contexts such as Kenya is to raise deterrence levels far higher. This has been done by effectively legitimising a shoot-to-kill policy when engaging poachers. This seems draconian but in truth many poachers are better armed and equipped than rangers so that ambush surprise tactics do help rebalance the rules of engagement. Unfortunately this policy does not usually involve the criminal kingpin responsible but can make their operations more costly. Yet kingpins are often protected by front men and a lack of extradition agreements between some countries. Collins, Fraser, Snowball 2016 note work that points out that there is no shortage of low income and unemployed men willing to joining wildlife poaching trips so that anti-poaching patrols and rangers must be well resourced and active whilst throughout the current onslaught of poaching and beyond

to ensure continuing deterrence. The problem is, however, compounded by truly remote wild herds in central Africa being significant to species survival as well as herds in national parks and private reserves which are somewhat easier assets to protect.

At the level of consumers, education to adults and children about the need for sustaining wildlife and biodiversity is a laudable measure but sadly likely to be very slow to realise sufficiently rapid returns in terms of arresting elephant population decline and difficult to attribute to it any component of decline should it occur. A more direct but perhaps riskier intervention would be to sanction flooding the market with synthetic or fake ivory and ivory substitutes. There are many antique dealers who feel confident in discerning authenticity but these may not always be available for consultation in some bilateral trades. There also remains the open empirical question as to whether such market flooding would inadvertently stoke currently latent demand.

With a modified CITES agreement in place to allow some regulated market institutions to develop under the scrutiny of international governmental scrutiny and international wildlife bodies (to ensure no illegal ivory laundering) then the speculative poaching motive from 'one off' or episodic sales maybe reduced and revenue from tusk sales fully recycled to support conservation efforts and fund ranger and anti-poaching patrols in countries without the economic resources to adequately fund them. Eventually over time a single internationally regulated supply chain may displace and through scale economies price out of the market the well-established criminal syndicate supply chain networks. Yet learning from other criminal networks where revenue streams are challenged in this way (such as drug gang turf wars) suggests it is likely to be accompanied by violence, sabotage and bloody conflict in the short term. This would need to be resisted by well-resourced police and ranger services. The illegal ivory supply chain will not just quietly and conveniently disappear.

Summary and Concluding Remarks

Elephant population numbers are seriously declining and if the rate of decline continues sub-species and species extinction in the coming decades are real possibilities. This decline is fuelled by poaching activity to provide illegal ivory for crafted items, sculpture and jewellery. Despite the operation of a high profile international trade ban agreement – CITES -poaching activity has recently accelerated and the number of prosecutions in ivory markets such as the UK remains surprisingly very low indeed. The reasons for this poor prosecution rate are considered in the context of the regulatory complexities associated with two broad categories of illegal sub-markets.

It is argued that there is no single panacea that would address this environmental resource problem so that a mix of policy instruments should be considered. For newly poached ivory the need for international cooperation, resource transfers and measures to improve institutional quality are considered to be essential pre-requisites to ensure the efficacy of any specific regulatory instrument. Such instruments may be applied at various stages of the supply chain, some of which are likely to vary in terms of the speed of their potential impact in arresting the decline of elephant population numbers.

For the trade in ostensibly 'post-1947 existing crafted ivory' web auction platforms are the key conduit in the UK and elsewhere for supporting this illegal trading. Continuous monitoring and enforcement, though resource intensive is considered the only practical means for addressing such wildlife crime. Internet trade bans are easily subverted and new, less visible auction trading platforms may easily emerge.

Ultimately to address category 1 and category 2 illegal sub-markets, conservation efforts and elephant herd protection must be funded. One-off or episodic stockpile sales from seizures, natural mortality and active conservation management may provide occasional cash injections to support conservation and protection activities and salaries but not on a necessarily continuous basis. They

may also have unintended consequences in stoking speculative poaching activity. Accordingly, revisiting the necessary institution building to support the development of a permanent regulated supply chain is urgently warranted. In this way conservation and protection related salaries and operations could be funded on a continuous sustainable basis. It is acknowledged, however, that the supply chains of criminal syndicates will not quietly be displaced such that a short term spike in violence, sabotage and poaching effort should be an expected response and well-resourced resistance needs to be set in place first.

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Table 1 London Auction Hammer Prices for Netsuke 2010- 2016 (May)

Auction House	Year	Item details	Price
Christies	2010	SIGNED <i>CHOUNSAI JUGYOKU</i> , EDO PERIOD (19TH CENTURY)	£5,000
Christies	2010	SIGNED OKATORI, EDO PERIOD (18TH CENTURY)	£9,375
Christies	2010	SIGNED TOMOTADA, EDO PERIOD (18TH CENTURY)	£10,000
Christies	2010	SIGNED MASAYUKI AND KAO, EDO PERIOD (19TH CENTURY)	£5,250
Christies	2010	EDO PERIOD (19TH CENTURY)	£1,000
Christies	2010	SIGNED SHUZAN, EDO PERIOD (19TH CENTURY)	£1,063
Christies	2010	SIGNED TOMOTADA, EDO PERIOD (18TH CENTURY)	£2,375
Christies	2010	EDO PERIOD (19TH CENTURY)	£2,500
Christies	2010	EDO PERIOD (18TH CENTURY)	£1,000
Christies	2010	SIGNED GYOKUMEI, EDO PERIOD (19TH CENTURY)	£750
Christies	2010	EDO PERIOD (18TH CENTURY)	£6,250
Christies	2010	SIGNED JORYU, EDO PERIOD (19TH CENTURY)	£438
Christies	2010	SIGNED KOGYOKU, MEIJI PERIOD (LATE 19TH CENTURY)	£500
Christies	2010	SIGNED MASAKAZU, EDO PERIOD (19TH CENTURY)	£1,250
Christies	2010	SIGNED SOSUI, MEIJI PERIOD (LATE 19TH CENTURY)	£3,750
Christies	2011	Two Ivory Netsuke, EDO-MEIJI PERIOD (19TH CENTURY)	£1,375
Christies	2011	Two Ivory Kagamibuta Netsuke, THE SECOND SIGNED NAGAMITSU, EDO PERIOD (19TH CENTURY)	£1,500
Christies	2011	EDO PERIOD (18TH CENTURY)	£2,250
Christies	2011	An Ivory Netsuke, EDO PERIOD (18TH-19TH CENTURY)	£750
Christies	2011	An Ivory Netsuke, SIGNED YOSHITOMO, EDO PERIOD (18TH CENTURY)	£1,000
Bonhams	2012	An ivory netsuke of domestic cat, early 19th century	£2,500
Bonhams	2012	An ivory netsuke of a hare, by Okatori, Kyoto, early 19th century	£3,750
Bonhams	2012	An ivory netsuke by Kagetoshi, 19th century	£2,500
Bonhams	2012	An ivory netsuke of a dog and pup by tomokazu, Kyoto, early 19th century	£5,250
Bonhams	2012	An ivory netsuke of a grazing horse, early 19th century	£1,750
Bonhams	2012	Two ivory netsuke both by Tomochika, late 19th century	£3,750
Bonhams	2012	An ivory netsuke of a yama-inu (wild dog) by Tomotada, Kyoto, early 19th century	£6,875
Christies	2013	SIGNED MASATAMI, EDO PERIOD (19TH CENTURY)	£3,250
Christies	2013	SIGNED RANSEN, EDO PERIOD (MID-19TH CENTURY)	£563
Christies	2013	An Ivory Netsuke and A Wood and Ivory Okimono, EDO PERIOD (19TH CENTURY)	£1,125
Christies	2013	SIGNED RYUMIN, MEIJI PERIOD (LATE 19TH CENTURY)	£750
Christies	2013	EDO PERIOD (19TH CENTURY)	£875

Christies	2013	EDO PERIOD (18TH CENTURY)	£3,750
Christies	2013	SIGNED KAGETOSHI, EDO PERIOD (19TH CENTURY)	£1,188
Christies	2013	Two Ivory Netsuke, EDO PERIOD (19TH CENTURY)	£1,125
Christies	2013	SIGNED TOMOMASA TO [CARVED BY TOMOMASA], EDO PERIOD (19TH CENTURY)	£875
Christies	2013	An Ivory Netsuke, WITH SIGNATURE OKATOMO, EDO PERIOD (19TH CENTURY)	£1,500
Christies	2013	An Ivory Netsuke, EDO PERIOD (18TH-19TH CENTURY)	£688
Christies	2013	An Ivory Netsuke, EDO PERIOD (EARLY 19TH CENTURY)	£750
Christies	2013	SIGNED IKKO, EDO PERIOD (19TH CENTURY)	£1,063
Christies	2013	Three Ivory Netsuke, EDO PERIOD (18TH-19TH CENTURY)	£1,750
Bonhams	2014	An ivory netsuke of a rat	£3,750
Bonhams	2014	A rare ivory netsuke of rats in a pumpkin	£2,250
Bonhams	2014	An ivory netsuke of a tiger on a bamboo	£2,250
Bonhams	2014	A rare ivory netsuke of a Daikon (forked raddish)	£5,250
Bonhams	2014	A large ivory netsuke of a stylised sparrow	£2,750
Bonhams	2014	A large ivory netsuke of Gama Sennin	£3,000
Bonhams	2014	A tall ivory netsuke of Kensu, Prawn Sennin	£2,000
Bonhams	2014	An ivory netsuke of water buffalo and boy	£2,250
Bonhams	2014	An ivory netsuke of a recumbent Ox	£1,000
Christies	2015	A JAPANESE IVORY SHIBAYAMA CASE AND MANJU NETSUKU, AND A SMALL TRAVELLING CLOCK WITH CASE, MEIJI PERIOD (1868-1912)	£2,125
Bonhams	2016	A fine ivory netsuke of a cow and calf	£8,750
Bonhams	2016	An ivory netsuke of an recumbent tiger	£2,500
Bonhams	2016	An ivory netsuke of a tiger on bamboo	£2,125
Bonhams	2016	An ivory netsuke of a tiger	£6,250
Bonhams	2016	An ivory netsuke of a hare	£1,250
Bonhams	2016	An ivory netsuke of a seated rabbit	£3,125
Bonhams	2016	An ivory netsuke of a rabbit	£1,500
Bonhams	2016	An ivory netsuke of a dragon	£2,750
Bonhams	2016	An ivory netsuke of a dragon fish	£4,375
Bonhams	2016	An ivory netsuke of a dragon	£7,500
Bonhams	2016	A rare ivory netsuke of a horse-headed seal	£4,375
Bonhams	2016	An ivory netsuke of a grazing horse	3,500
Bonhams	2016	An ivory large netsuke of a grazing horse	£1,875
Bonhams	2016	An ivory netsuke of a monkey	£4,000
Bonhams	2016	An ivory netsuke of a monkey and catfish	£1,875

Bonhams	2016	An ivory netsuke of a seabird	£1,500
Bonhams	2016	An ivory netsuke of a recumbent wild boar	£6,250