



## Smuggling wildlife in the Americas: scale, methods, and links to other organised crimes

Peter Reuter & Davin O'Regan

To cite this article: Peter Reuter & Davin O'Regan (2016): Smuggling wildlife in the Americas: scale, methods, and links to other organised crimes, Global Crime, DOI: [10.1080/17440572.2016.1179633](https://doi.org/10.1080/17440572.2016.1179633)

To link to this article: <http://dx.doi.org/10.1080/17440572.2016.1179633>



Published online: 12 May 2016.



Submit your article to this journal [↗](#)



View related articles [↗](#)



View Crossmark data [↗](#)

## Smuggling wildlife in the Americas: scale, methods, and links to other organised crimes

Peter Reuter<sup>a</sup> and Davin O'Regan<sup>b\*</sup>

<sup>a</sup>*School of Public Policy and Department of Criminology, University of Maryland, College Park, MD, USA;* <sup>b</sup>*School of Public Policy, University of Maryland, College Park, MD, USA*

International wildlife trafficking has garnered increased attention in recent years with a focus on the illicit trade in ivory, rhinos, and other animals from Africa and Asia. Less is known about trafficking in the Americas. By conducting a systematic review of academic literature, popular accounts, and government reports, this case study attempts to identify the scope and methods of wildlife trafficking in the Americas and its connections to organised crime. Unlike arms or drug smuggling, individual operators with minimal connections to other criminal activities dominate the trade. Most perpetrators work independently and have expertise and interests in legitimate businesses involving animal products. Methods of concealment are frequently rudimentary and little appears to be known about primary trafficking routes. Overall, wildlife smuggling in the Western Hemisphere appears to be a small-scale activity, small in its aggregate amounts, and strongly linked to legitimate businesses operating in a low risk and technologically narrow environment.

**Keywords:** wildlife trafficking; wildlife smuggling; North America; South America; Latin America

### 1. Motivation

With the release in February 2014 of a *National Strategy for Combating Wildlife Trafficking*, the administration of President Barack Obama laid out its response to mounting international concerns about the illicit trade in wildlife products. In framing the need for a robust and coordinated US effort, the President highlighted the trade's significant growth, its linkages with other forms of organised crime, and the United States' role as a consumer nation.

'Record high demand for wildlife products, coupled with inadequate preventative measures and weak institutions has resulted in an explosion of illicit trade in wildlife in recent years. ... We know that the United States is among the world's major markets for wildlife and wildlife products, both legal and illegal', President Obama explained. Moreover, the networks behind the illegal trafficking in wildlife 'are likely the same or overlap with those that also deal in other illicit goods such as drugs and weapons'. 'Like other forms of illicit trade, wildlife trafficking undermines security across nations'.<sup>1</sup>

Much of the content of the US National Strategy and policy scholarship on wildlife trafficking has focused on poaching and smuggling of animals in Africa and Asia. For instance, DNA forensic analysis from seizures in Asia and Africa indicates that large amounts of illegally trafficked ivory are sourced from just a few select regions in Africa,

---

\*Corresponding author. Email: [doregan@umd.edu](mailto:doregan@umd.edu)

possibly suggesting a high degree of organisation and vertical integration among suppliers, smugglers, and dealers of ivory.<sup>2</sup> Likewise, the US government in 2014 announced a \$1 million reward for information that aids the dismantlement of an alleged trafficking ring led by Vixay Keosavang, a Laotian national. Keosavang has been called the 'Pablo Escobar of wildlife trafficking'.<sup>3</sup>

By contrast, less is known about the scale, methods, and perpetrators of similar crimes in the Americas, which contains some of the most biologically rich and diverse regions in the world. What can be learned about the illicit wildlife trade in the Western Hemisphere? This case study describes the trade in protected wildlife, including animals, birds, snakes, arachnids (spiders), or plants that are prohibited for import into the United States from Latin America without a specific license. The research conducted here suggests that wildlife trafficking into the United States from elsewhere in the Western Hemisphere consists of a series of distinct specialised markets, populated by individuals or small organisations that have no visible connection to other kinds of illegal traffic or to organised crime.<sup>4</sup> There have been, in particular niches, long-lasting enterprises that have developed refined smuggling techniques. These enterprises do not seem to have built connections with those involved in smuggling drugs or humans. Moreover, they very rarely have known connections to political activities.

Even more important, the research suggests that contrary to the illegal trade in flora and fauna elsewhere in the world, the inter-American trade is very small, minuscule in revenues compared to the drug trade. That said, its conservation effects may still be important – low population or vulnerable species may be highly impacted by small-scale trafficking or a low-profit trade.

From an operational perspective, little is known about US efforts to enforce existing laws on the importation of wildlife. Almost nothing has been written about strategies and tactics of enforcement by the lead federal agency, the Fish and Wildlife Service (FWS), or by its foreign counterparts. The official reports yield only minimal systematic detail, but do indicate that there are few criminal cases annually and very few that are subject to felony prosecutions. Even though the trade itself is small, the legal risks facing the individuals involved appear modest.

Wildlife smuggling has some features that make it of particular interest in comparison to other illicit commodity smuggling. It involves, at least in some instances (e.g. birds and snakes), transportation of goods that need careful handling and prompt delivery to be successful. This contrasts with drugs that can be (and are) put into almost any kind of packaging and left in transit for long periods of time. In contrast to drugs, illegal wildlife smuggling is also subject to inspection by a small, specialised agency; general border guards are only lightly trained and moderately motivated to detect this kind of shipment. Wildlife from the Americas is a low priority to all but the specialised agencies concerned, both in the United States and other countries in the Western Hemisphere.

The smuggling of wildlife has been a topic of at least rhetorical interest for the last 20 years. Claims are routinely made that it has become the second or third largest international smuggling market, after drugs, competing with human smuggling for the second spot.<sup>5</sup> There are occasional reports of large-scale smuggling activities and many reports of small-scale trafficking, particularly from Africa to Asia. The demand of an increasingly rich Chinese population for artwork, traditional aphrodisiacs, and medicines involving body parts of protected species such as elephants and rhinoceros is seen as the principal driver of this trade. There are also a few cases each year of wildlife smuggling from Latin America to the United States, indicating the existence of at least a modest

amount of illegal trafficking along that route, perhaps more through Miami rather than across the Mexican land border.

Despite these claims of the importance of the trade in prohibited wildlife, there is little systematic academic research on this traffic. This study relies heavily on reports from federal investigations, individual cases, and on other government studies, books by journalists, supplemented by a few interviews with experienced government investigators. Thus, its limits are those of government knowledge about the trade. We argue later that it is precisely the more organised sector about which the government is likely to be most knowledgeable but acknowledge that this is a conjecture without any direct evidence.

Our empirical goal is to characterise the features of wildlife smuggling from (broadly defined) Latin America to the United States. There are three sub-questions:

- (1) What are the organisational characteristics of wildlife smuggling? Are the enterprises large or small?
- (2) What methods and routes are employed?
- (3) How much does this activity connect to smuggling of other goods, to organised crime, and to political actors?

These are descriptive questions. It is also useful to ask why the industry has the shape it does. The fact that the shape of illegal markets is heavily influenced by the characteristics and intensity of enforcement<sup>6</sup> leads to some attention to enforcement against wildlife smuggling.

The next section provides a more precise definition of the subject and a review of the small literature, academic, official, and popular. [Sections 3](#) and [4](#) examine the information available from official reports. [Section 5](#) then briefly summarises the little that is known about methods and routes of smuggling. [Section 6](#) offers some speculations on why the trade is specialised. [Appendix](#) is a description of our search strategy for the literature review.

## 2. Definition and literature review

### 2.1. Definition

The scope of wildlife trafficking is very broad. It might be taken to include all international transactions involving the movement of species that are protected by law in either the source or the destination country, whether dead or alive. For example, bluefin tuna fishing is subject to strict quotas set by international agreements; considerable effort is made by some nations with rich stocks of the fish to prevent foreign fishermen from exceeding the quota.<sup>7</sup> The trade in illegal bluefin tuna involves taking a protected wildlife species illegally across international boundaries. This trade is covered by the Lacey Act, the basic US federal statute governing illegal wildlife trade, both domestic and international.<sup>8</sup> The importation of prohibited timber species is another example of this kind of smuggling; the logging may have been legal in the country of origin but the export to the US is illegal and the type of timber will be misrepresented. Timber and fisheries are often excluded from measurements of the illegal wildlife trade in both criminological and conservation research.<sup>9</sup>

The coverage of our study is limited. We do not have data on protected fish smuggled for consumption or on protected timber species intended for construction or related activities. Our coverage is of all other wildlife smuggling, primarily aimed at collectors.

It involves the importation of a species whose import is forbidden and which requires strategic deception of border authorities at ports of entry. Strategic deception can be as simple as false papers that misrepresent the species or origin of the shipment or false-bottomed suitcases. The smuggled species can include plants (e.g. orchids) as well as animals (including reptiles and spiders) but we focused on the latter as it is better understood.

## 2.2. *Literature review methodology*

We undertook a limited systematic review, using for the identification of items the general principles of the Campbell collaboration.<sup>10</sup> The goal was to obtain a comprehensive listing of items for inclusion in the study. We did not code the resulting bibliographic database or attempt a meta-analysis, because at this stage there is no specific analytic question for which parameter estimates are sought. The strategy is described in [Appendix](#).

Initially, we limited the search to documents involving Latin America and the United States. Given the thin yield of that search, we then did a broader search for international wildlife smuggling more generally, thus including other regions of the world. This expansion gives us some insight into the characteristics of wildlife smuggling generally, but the number of items was still minute.

## 2.3. *Academic literature*

The field of wildlife smuggling engages the attentions of some prominent criminologists, such as Ronald V. Clarke (the founder of situational crime prevention studies) and Nigel South (well known in the field of drug market research). Thus, there are now occasional articles on wildlife smuggling in criminology journals. The academic research to date on the illegal wildlife trade has emphasised the way in which the trade affects the environment and wildlife conservation rather than how it is organised or how it compares to other illegal markets. One of the few articles to make explicit comparisons across illegal markets is that of South and Wyatt,<sup>11</sup> comparing the wildlife trade and that in illicit drugs. South and Wyatt drew on a wide range of materials geographically, though much of the wildlife trade description concerned Russia. Unfortunately, their categories are so broad that the conclusions are of little value; for example, they present a five-part typology of drug dealers and a similar five-part typology of those involved in the illegal wildlife business and conclude that this may lead to more integration and similarity of the two illegal trades. However, the capacity to classify some drug traders and some wildlife traffickers as, for example, opportunistic regulars, provides no evidence that the two trades might integrate.

Pires and Clarke have studied the illegal parrot trades in Bolivia and Mexico.<sup>12</sup> Working with primary data, they show that the initial phase of collecting the legally protected parrots is the result of individual enterprise by peasants and that there is more organisation in the later levels of the trade.<sup>13</sup> Additional interviews of poachers, retailers, middlemen, and others linked to the wild parrot trade in Bolivia and Peru by Pires, Schneider, and Herrera finds that 'the lack of both criminal sophistication and organized crime characteristics emerged as an important theme in the interviews'.<sup>14</sup> Drawing on data from bird sales at city markets in Bolivia and Peru, Pires also concludes that the trade tends to be localised and features only some inter-city or cross-border trading between the two countries.<sup>15</sup>

Surveys in 10 city markets in Recife, Brazil in 2010 and 2011 to measure the scope of the illegal bird trade reveal similar results. The majority of birds sold were from within Brazil, and buyers are 'average citizens (fathers and boyfriends presenting their sons and lovers) plus professional songbird breeders looking for matrices'.<sup>16</sup> It was estimated that the markets as a whole sold roughly 50,000 birds a year for total annual revenues of just \$630,000. However, little detail was collected on the precise source of the birds or the methods by which they were transported, since the focus of the study, like many others, was 'the impact street markets may have on biodiversity'.<sup>17</sup>

Zimmerman draws uncritically on other sources to provide a description of the global wildlife trade but her prime interest is in suggesting ways of strengthening the system of laws for dealing with the trade.<sup>18</sup> She provides no description of the organisation of the trade beyond quoting others.

An analysis of records of shipment inspections by US FWS authorities between 2003 and 2013 indicate that overall seizure rates have paralleled the number of inspections, suggesting no evidence that the rate of wildlife trafficking has changed. Most of the seized wildlife shipments entered the United States from East Asia, Southeast Asia, Mexico, and Canada. The large volume from the latter two countries 'may be explained, in part, as being neighbouring countries with heavy tourism travel that takes place between these countries and the United States', and so a sizable amount of this volume is attributable to tourists and hunters unaware of or dismissive of wildlife regulations rather than to professional traffickers.<sup>19</sup> Air cargo and personal baggage were the mode of transport in 69% of all seizure incidents.

Expanding to literature outside Latin America, Steinberg describes the organisation and context of the illegal abalone trade in South Africa.<sup>20</sup> He shows that the catching of the protected species is still done by traditional fishing communities who then sell to Chinese organised crime groups, long active in South Africa; the latter smuggle the crustacean to East Asia. Ming describes smuggling in the Himalayan region of China but simply identifies what is being smuggled where. The numbers of known offenses are quite small; for example, there are only 30 known cases of Giant Panda smuggling between 1987 and 1998. Nothing is said about the organisation of the international smuggling trade. One interesting feature of this trade is that offenders are subject to heavy penalties: sentences for some offenses (e.g. smuggling the Giant Panda) occasionally include the death penalty.

Analysis of wildlife export and import data collected by China, Indonesia, and Southeast Asian members of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) by Nijman found that while the legitimate trade in wildlife is extensive, illegal confiscations represented just 0.75% of all legal cross-border transactions. Nijman is unable to provide much detail on the methods or routes of such illegal transactions, given that the data does not specify modes of shipments or ports of entry and exit.<sup>21</sup> Like other papers, Nijman is focused on the potential conservation impacts of the wildlife trade as a whole, not the specifics of its illicit dimensions.

In surveys of four city markets in Thailand, Phelps and Webb concluded that many orchids on sale originated illegally from Myanmar and Laos. Two of the four markets they surveyed, however, were located on Thailand's borders with Myanmar and Laos, suggesting some possible bias in their methods. No detail is offered on the methods of moving the illegal flora, and the trade is also described as 'open and prevalent', suggesting that it is low risk, unsophisticated, and free flowing for suppliers and transporters. They also conclude that its international extent may be limited: 'Previous characterizations of illegal

trade have often focused on consumption outside the region, e.g. in Europe, Japan, China and North America. However, our results suggests significant demand for ornamental plants arising from within Thailand itself'.<sup>22</sup>

Other academic papers with attractive titles include: Alacs and George, Koski, and Yiming and Dianmo. None of them turn out to deal with the specific issue of the smuggling trade itself. They are more concerned with the harms that poaching and smuggling inflict on the environment.<sup>23</sup>

#### 2.4. *The grey literature*

A number of non-academic organisations have conducted studies on different aspects of the illegal wildlife trade. These include international institutions such as the World Bank and the United Nations, US agencies such as the Congressional Research Service (CRS), and non-profit organisations such as the Defenders of Wildlife and the World Wildlife Fund. These provide the most cited documents on the subject.

Yet, the information about the smuggling sector is minimal. For example, the 2005 World Bank study of the illegal trade in wildlife in East and Southeast Asia provides four parsimoniously described case studies of different ecosystems that are being exploited for domestic and international trade of protected wildlife, but does not explore the smuggling aspect.<sup>24</sup>

Cantu et al., working for a conservation organisation (Defenders of Wildlife) provide an exhaustive study of the illegal parrot trade in Mexico.<sup>25</sup> However, they focus, as do the academic papers, on the trapping and not on the smuggling itself. They conclude that the trapping is 'basically an unregulated free-for-all', subject to minimal enforcement in Mexico itself.<sup>26</sup> The smuggling that occurs is by land. They note, however, that this is now an internal trade, with fewer than 15% of the parrots illegally trapped being exported (3000–10,000 circa 2005). This is a major change from the 1970s and 1980s when many parrots were being smuggled to the United States; they provide no explanation as to why that change occurred. Other studies have determined that the passage of the Wild Bird Conservation Act (WBCA) of 1992 in the United States resulted in measurable declines in poaching rates, suggesting that parrot trafficking may be affected by restrictions in high-value consumer countries. However, the measured reductions in poaching before and after the WBCA passage were significant for only four types of birds, often based on observations of just a handful of nests, and poaching rates measured after the WBCA varied significantly across countries and birds, with some species experiencing 70% poaching rates and others left untouched.<sup>27</sup>

Various reports from Defenders of Wildlife<sup>28</sup> and TRAFFIC<sup>29</sup> use data produced by CITES members on the wildlife trade to identify the types, volumes, and routes of wildlife trafficking. However, these data, which are collected by the CITES national management agencies, can be problematic. For instance, comparisons of US customs data to CITES data collected by the US FWS yield significant discrepancies, sometimes by orders of magnitude, even for wildlife products that are the most commonly shipped or seized. Nor are the differences systematic, complicating the ability to adjust the measurements.<sup>30</sup> Other TRAFFIC reports do not provide clear information on the scale, methods, or routes of illegal international traffic of wildlife. One survey of sales at markets in Mexico of reptiles from the Chihuahuan Desert region found that 'most of this [wildlife] trade is targeted at [Mexican] nationals seeking personal pets or resale in established businesses'.<sup>31</sup>

A 2008 CRS Report analyses the causes and markets fuelling animal trafficking, as well as the potential national security implications.<sup>32</sup> The report explains that there has yet to be a distinct criminal profile that identifies or differentiates animal traffickers. Also, while little has been written on the topic, the current understanding is that individuals who traffic animals are involved in small, well-organised groups, and not necessarily large criminal syndicates. Criminal syndicates may only be interested in high-end wildlife commodities, such as expensive pelts or ivory.

### **2.5. *Wildlife smuggling, organised crime, and drug smuggling***

A common theme in the grey literature studies is that the wildlife trade is linked to drugs. The Congressional Research Service put together a number of documents on this matter. A sample statement is as follows:

The United Nations reports that members of the former Cali drug cartel in Colombia and Mexican drug dealers have also allegedly smuggled mixed shipments of drugs and wildlife products into the United States. According to the Brazilian National Network Against the Trafficking of Wild Animals (RENTAS), 40% of an estimated 400 criminal rings smuggling animals were also involved in other criminal activities, especially drug trafficking. The CITES Secretariat has also reported that combinations of parrots and drugs have been smuggled together from Cote d'Ivoire to Israel.<sup>33</sup>

The cited source for the claim about the connection between animal smuggling and other criminal activities is a statement by an advocacy organisation (RENTAS), hardly an authoritative source. The other two sources (the United Nations and CITES secretariat) do not conduct primary research or investigation; their statements have neither authority nor objectivity, since it is helpful to their interests to make claims of connections between their specific concerns and other broader social concerns.

Other documents making similar statements are easily found. For example Hayman and Brack state that ““Backloading” may also occur, where smugglers carry drugs to one destination and bring back wildlife, although in many cases wildlife and drugs are passing from South to North”.<sup>34</sup> In the same study, there is reference to a statement from US FWS that one-third of cocaine seized in the US in 1993 was associated with wildlife imports. No specific documentation of the claim is provided anywhere and its credibility is further undermined by the fact that no such statement about the merging of cocaine and wildlife traffic has been made again in the following 20 years. An experienced federal prosecutor noted that in the course of his long career of wildlife prosecution, he had found no evidence of connections between drug smuggling and wildlife smuggling.<sup>35</sup>

The TRAFFIC study by Lowther et al. describes many connections between wildlife smuggling and other criminal activities.<sup>36</sup> For example, it reports (again for 1993) an instance in which live boa constrictors had been stuffed with condoms full of cocaine; the 312 snakes all died when the cocaine was retrieved. This is not a case of smuggling wildlife and drugs but rather using the cover of legal wildlife imports as a method for concealing drugs. The study notes that ‘half of the wildlife criminals prosecuted in the United Kingdom have previous convictions for drugs, violence, theft, and firearms offenses’. This may say more about the prosecutor’s criteria for seeking indictments than about the extent of connection between wildlife trafficking and other criminal activities. Criminal prosecutions for wildlife trafficking in the United Kingdom are rare, a total of 83 over the 15 year period 1987–2002, as noted in the same report, and may be reserved mostly for those offenders with prior convictions for other offenses. With fewer than six prosecutions per annum, the

Table 1. Numbers of cases involving Federal convictions for Lacey Act offenses, 2005–2014.

| Year | Cases with Lacey Act convictions | No. per 1000 total cases | Average sentence (months) | Median sentence (months) | Number of Lacey Act cases also including conviction for . . . |                  |       |      |
|------|----------------------------------|--------------------------|---------------------------|--------------------------|---|------------------|-------|------|
|      |                                  |                          |                           |                          | Money laundering  | Drug trafficking | Fraud | RICO |
| 2005 | 93                               | 1.28                     | 2.92                      | 0                        | 0   | 0                | 1     | 0    |
| 2006 | 83                               | 1.14                     | 3.68                      | 0                        | 0   | 1                | 3     | 0    |
| 2007 | 104                              | 1.43                     | 2.22                      | 0                        | 1   | 1                | 1     | 0    |
| 2008 | 95                               | 1.24                     | 1.76                      | 0                        | 0   | 0                | 1     | 0    |
| 2009 | 100                              | 1.23                     | 2.74                      | 0                        | 0   | 0                | 0     | 0    |
| 2010 | 55                               | 0.66                     | 3.93                      | 0                        | 0   | 1                | 2     | 0    |
| 2011 | 84                               | 0.97                     | 5.19                      | 0                        | 0   | 2                | 2     | 0    |
| 2012 | 89                               | 1.06                     | 6.12                      | 0                        | 0   | 2                | 1     | 0    |
| 2013 | 93                               | 1.16                     | 2.79                      | 0                        | 2   | 0                | 2     | 0    |
| 2014 | 96                               | 1.27                     | 2.05                      | 0                        | 0   | 0                | 1     | 0    |

Source: US Sentencing Commission. Number of convictions based on relevant federal codes derived from Legal Information Institute at Cornell University (<https://www.law.cornell.edu/uscode/text/18>). RICO, Racketeer Influenced and Corrupt Organizations

evidence this provides on connections between wildlife smuggling and drug smuggling is slight indeed. In the United States, cases featuring federal convictions for Lacey Act offenses are less rare but still low in number, feature mild sentences, and rarely involve concomitant convictions for money laundering, drug trafficking, fraud, or other types of offenses associated with organised crime (see Table 1).

A workshop report from the Royal Institute of International Affairs contains some statements about the connections between wildlife smuggling and organised criminal activities.<sup>37</sup> No specific sources are cited for statements such as ‘Restrictions or bottlenecks at certain points along international commodity chains allow for more classic organised criminal involvement in environmental crimes as, for example, with cross-border smuggling groups which specialise in avoiding border checkpoints’.<sup>38</sup>

Another more systematic study sheds light on the question of connections between the smuggling of wildlife and other goods through an entirely different research path. Lichtenwald, Perri, and MacKenzie sought to collect data on instances in which a single seizure contained two different contraband items; for example, weapons and drugs; wildlife and people.<sup>39</sup> They describe in detail their efforts to obtain data through Freedom of Information Act (FOIA) requests to a number of US agencies, some of which were helpful but all of which said that their data systems were not well structured to detect such instances. Each agency focused on its particular responsibility. DEA, for example, might not record that it made a wildlife seizure when it intercepted a large cocaine shipment, since that seizure would almost certainly not add to the sentence that the drug smuggler would receive. The researchers also made inquiries of agencies in other countries.

Ultimately, they were able to report just 19 cases of what they call ‘multi-consignment contraband’, including six that did not involve the United States as source or destination. Six of the cases involved wildlife and drugs. The wildlife was varied: tortoises, reptiles, ivory, jaguars, and birds (two cases). A seventh case involved wildlife and plants.

The authors make clear that official information systems are incomplete on these kinds of incidents and that they did not get access to all cases in the various agencies.

Nonetheless, given the diligence of their data collection, it is striking that they were able to find so few cases in which wildlife was smuggled with other contraband.

In summary, notwithstanding the repeated claims of a close connection, there is little evidence linking wildlife smuggling into the United States with drug traffic or other forms of organised crime.

## 2.6. Popular accounts

A literature review of this topic would be incomplete without consideration of popular, journalistic writing. The richest descriptions of smuggling efforts are contained in books such as *The Lizard King* and *Stolen World: A Tale of Reptiles, Smugglers and Skulduggery*, both accounts of the smuggling of reptiles and related species.<sup>40</sup> Both follow the conventions of popular writing by focusing on a charismatic and unusual individual. Yet, they provide compelling and credible accounts of the larger networks in which the protagonists operate, with frequent use of law enforcement investigative materials and interviews with the investigators themselves. While embellishment is to be expected in such volumes, the basic descriptions drawn from indictments and similar legal documents are hard to doubt.

The *Lizard King* describes a world of specialised smugglers connecting far-flung parts of the world, from Indonesia and Madagascar to Guyana and Brazil. The central node in this instance was a prominent Florida-based dealer, Michael van Nostrand, who supplied all kinds of legitimate buyers, including zoos. The smuggled species were just part of his business; he supplied many legitimate shipments and indeed was the leading figure in that trade. At no stage in the account of his activities was there reference to his involvement in any other smuggling or criminal activity. Some of those from whom he bought, particularly his major Asian connection, Anson Wong, may have used their networks for other smuggling but that was incidental. Their skills were specialised, knowing both the sources of and markets for protected species and the paperwork ruses that were an essential part of many smuggling techniques.

## 3. Expanding the database

In light of the limitations of the available literature, we looked for other sources. One potentially useful source of information about this smuggling sector that has not been systematically exploited is the set of cases generated by the FWS.<sup>41</sup> The FWS is an agency within the Department of Interior; one of its bureaus (the Office of Law Enforcement) provides the specialised manpower for enforcement of laws such as the Lacey Act. Customs and Border Protection (CBP) within the Department of Homeland Security has similar powers. However, wildlife seizures by Customs and Border Patrol, primarily as the result of inspection at Port of Entry rather than investigation, are handed over to FWS if of any significance.<sup>42</sup> There are no reports or press releases of CBP wildlife investigations. The only other agency that appears to do such investigative work is the Office of Law Enforcement of the National Oceanic and Atmospheric Administration. This had a total staff of 114 in 2012 and was primarily devoted to enforcing rules concerning fishing quotas in US waters.<sup>43</sup>

Each year for at least the past decade, the FWS has published an *Annual Report*, which includes, amongst other matters, a capsule summary of some smuggling cases under the category of *Combating Global Wildlife Trafficking*. It is further broken down into two sub-categories: *Interceptions of Illegal Wildlife Trade* and *Investigative Efforts*.

We assume that the reported cases are the more serious ones; it is hard to imagine why that would not be the case for any public agency.

Yet, there is hardly any reference to large-scale trafficking among the items listed in the Annual Reports. Typical of the smuggling operations mentioned are:

A husband and wife in El Paso who pleaded guilty to smuggling commercial quantities of exotic leather products into the United States from Mexico were sentenced to six months home confinement, four years probation, and \$1500 in fines. They also forfeited some \$8700 worth of smuggled goods.<sup>44</sup>

The last defendant in Operation Shell Game – a cooperative US/Canada investigation that exposed large-scale illegal trafficking in CITES-protected queen conch meat – pleaded guilty to felony conspiracy charges after admitting that he had illegally harvested some 115,000 pounds of queen conch in Honduran waters for smuggling to a Miami seafood business.<sup>45</sup>

A Houston importer caught importing 1383 strands of CITES-protected coral without a permit was fined \$10,000 and ordered to forfeit the wildlife.<sup>46</sup>

Many of the listed cases are truly minor, a single individual bringing in a small number of a protected species. Even a listing of *Highlights of Investigations 2006–2010* contained items as minor as: 'A Virginia man who pleaded guilty to illegally importing CITES-listed tortoises was fined \$15,000'.<sup>47</sup>

The only very large-scale smuggling activity listed in the *Annual Reports* comes from a series of investigations of caviar smuggling from Russia and other countries of the former Soviet Union. From about 1996–2002, the Department of Justice indicted a number of individuals and corporations for importing prohibited caviar, mostly via the United Arab Emirates.<sup>48</sup> These cases resulted in large fines (\$10 million in one instance of a legitimate corporation) and relatively lengthy prison sentences (up to 41 months). The defendants included many legitimate businessmen and airline employees; none of the defendants were reported to be involved in other criminal activities. Much of the smuggling involved not so much concealment of the cargo but furnishing false documents, so that protected and expensive caviar was labelled as legal and cheap lumpfish roe.

Reading the FWS annual reports illustrates the sentencing problem for international enforcement actions. For domestic cases in 2008, the report listed 11 cases that resulted in sentences of prison time. The sentences ranged from 3 to 37 months; the average was 19 months. For the international cases, there were only three instances where imprisonment was listed. One, involving a large-scale elephant ivory importing scheme, generated a 5-year prison term; the other two sentences were 16 months and 6 months. In fact, the longest sentence imposed in the United States for any wildlife smuggling case over the last 20 years was handed down in 2014 to an individual for trafficking ivory and rhino horn to Asia.<sup>49</sup> At just 70 months, the prison sentence was about 9 months shorter than an average drug trafficking sentence.<sup>50</sup> Overall, prison sentences resulting from convictions for FWS-related cases, including wildlife trafficking, tend to be limited.

It is not hard to explain the minor character of the offenses and light penalties for these cases. The FWS Office of Law Enforcement is a modest-sized agency, with about 300 employees,<sup>51</sup> and has many different responsibilities, including domestic enforcement of the Lacey Act and certain aspects of the Endangered Species Act. The workforce available to control international wildlife smuggling is very small indeed. Moreover, there are longstanding complaints that the FWS receives very little support from federal prosecutors, who are reluctant to prosecute smugglers for felonies, which would involve diverting

resources from easier felony cases that attract higher penalties.<sup>52</sup> Drug cases, which account for a majority of the federal prosecutor caseload, are indeed less demanding to make, involve defendants with less complex status (rarely well-established businessmen), and frequently lead to pleas that generate 5-year sentences. That said, increased enforcement and prosecutions are a key emphasis of both the 2014 *National Strategy for Combating Wildlife Trafficking* and the report of the President's Advisory Council on Wildlife Trafficking. Future investigations and prosecutions may increase in number and severity as a result.

Another potentially illuminating source of information regarding wildlife trafficking in the Americas is the activities of multilateral bodies focused on transnational crime. INTERPOL in particular has become increasingly involved in monitoring wildlife and environmental crimes. The organisation's Sub-Directorate on Environmental Security, established in 2013 to better institutionalise the work of INTERPOL's Environmental Crime Programme that was launched in 2009,<sup>53</sup> has coordinated 22 enforcement efforts with member states. Each operation often results in the seizure of illegally obtained wildlife products as well as the arrests of poachers and smugglers. Of those operations that have focused on wildlife crimes, eight have included at least one country from Latin America and the Caribbean.<sup>54</sup> Four of those have specifically targeted forest crimes and illegal logging, which appears to be, as part of INTERPOL's Project Leaf effort, the wildlife crime priority across the region.

Despite these efforts, environmental crimes appear to remain a low priority in the Americas, nor do they seem to feature high-level criminals. States in the Western Hemisphere have issued just a handful of INTERPOL 'Red Notices', requests transmitted through INTERPOL to all member states in order to locate and arrest specific individuals for eventual extradition, for environmental crimes. Moreover, these requests represent less than 1% of all Red Notices issued by countries in the region, suggesting that either the incidence or severity of environmental crimes is relatively minimal or that such crimes are not a law enforcement priority for INTERPOL members in the region (see Table 2).

#### 4. Methods and routes

We draw here on a variety of sources to describe what is known about methods and routes for smuggling wildlife from Latin America to the United States. Christy is one important source of information. We make no claim to be able to describe the trade as a whole; there are no comprehensive studies on which to draw.<sup>55</sup> Much of what is known involves simple concealment on passengers. We take a few of the FWS 2008 listed cases for which more detailed information could be found through a web search, either from newspaper

Table 2. Counts of Red Notices in the Americas.

| Year              | Environmental Red Notices | Total Red Notices |
|-------------------|---------------------------|-------------------|
| 2010              | 3                         | 2150              |
| 2011              | 5                         | 2372              |
| 2012              | 8                         | 2846              |
| 2013              | 10                        | 3025              |
| 2014              | 8                         | 3652              |
| 2015 (Jan.–Sept.) | 4                         | 2397              |

Source: INTERPOL.

stories or from Department of Justice press releases. All of the cases involved very simple techniques, little more than concealment in regular luggage or false documentation.

A US-based Guyanese was recently arrested at JFK Airport trying to smuggle 13 singing finches, popularly known as Twa Twa, hidden inside hair curlers.<sup>56</sup>

[I]t is alleged that between 2004 and 2006, 119,978 kilograms of protected queen conch meat from the Dominican Republic, Haiti, Jamaica, Honduras, and Colombia was shipped to Canada using false descriptions to avoid detection by officials. Once in Canada, the meat was either sold on the local market or re-packaged – sometimes as ‘whelk meat’, a non-endangered cold water species – from where it was shipped to the United States.<sup>57</sup>

Jorge Caraveo was the owner of a leather wares company in El Paso. ‘Going about his business, Caraveo crossed the border between Juarez, Mexico and El Paso, Texas daily and frequently concealed footwear and skins of exotic animals in his vehicle. Caraveo received in Juarez exotic leathers and leather products from co-defendants in Mexico for clandestine importation into the United States. Caraveo received “crossing fees” as payment for his smuggling activities’.<sup>58</sup> He received an 18-month prison sentence.

The defendants introduced the gun grips into the US by falsely describing them on invoices and other documents as ‘rough cutting board samples’. They failed to provide required notices to the FWS to import protected rosewood, and had also failed to secure required export permits from the Governmental of Brazil. Rosewood, or *Dalbergia nigra*, is a highly prized Brazilian hardwood sometimes used to make high-end musical instruments and equipment.<sup>59</sup>

Nothing in the FWS or Google search literature turned up instances of smuggling between Ports of Entry, which accounts for much smuggling of drugs and humans. This is no doubt influenced by the size of the FWS workforce; there are too few agents to have them regularly situated on the border away from the high yield Ports of Entry inspection. One might have expected that CBP or ICE (the front line units of the Department of Homeland Security) would interdict such smuggling incidentally during their other inspection activities.<sup>60</sup> Perhaps such incidents are not reported because they are viewed as insufficiently important in the context of the CBP and ICE missions, so that not too much weight should be given to the lack of reported interceptions. Nonetheless, it is at least a weak indicator of slight trafficking by such methods.

What remains utterly obscure is the route by which wildlife enters from Latin America to the United States. A four-page list of investigative highlights from FWS, covering the years 2006–2010, included not a single case in which the origin of the smuggled item was Latin America.<sup>61</sup> Christy provides only the national origin of the smuggling agents, not the places from which the smuggled reptiles came. For example, a central incident involved an Argentinian who was smuggling Argentinian origin tortoises and snakes, but after that Argentina disappears from the book and nothing is said about how or where the reptiles were acquired.

## 5. Why is wildlife smuggling so isolated from other criminal markets?

It is risky to characterise the wildlife smuggling trade into the United States on the basis of the very incomplete information available. Enforcement is not stringent; there may be sectors that are simply never captured by FWS or other inspectors. However, it does appear that the business is dominated by highly specialised smuggling organisations.

Michael van Nostrand, the dealer described in *The Lizard King*, handled only reptiles. There are many forms of reptiles: iguana, turtles, vipers, and so on. They come from many parts of the world, including Malaysia, Australia, Madagascar, and Mexico. But van Nostrand did not handle other kinds of wildlife, such as parrots, fish, or spiders, let alone other kinds of smuggled goods, such as drugs or humans. The caviar smugglers that the Department of Justice pursued between 1998 and 2002 were associated with no other smuggled commodity.

Another, admittedly weak, test is a review of announcements of cases from the FWS (the sections labelled *Interceptions of Illegal Wildlife Trade* and *Investigative Efforts*) over the period 2000–2008. These do not contain allegations of individual groups smuggling multiple commodities. This may again reflect the small investigative workforce available to FWS; there may not be resources to further investigate a smuggler after he has been detected bringing in one prohibited commodity. Also note that the number of reported successes is small; in 2009, there were 20 interceptions and 19 investigations listed.

Four factors may contribute to this apparent lack of connection to the broader criminal world. First, smuggler risk is minimised by merging illegal and legal marketing channels. In contrast to cocaine or heroin, illegality is often not a function of the wildlife itself but of its origins. An Indian star tortoise caught in the wild cannot be imported into the United States, being listed under CITES [Appendix](#). However, if paperwork shows it has been bred in captivity in another country, then it can be legally imported.<sup>62</sup> Thus, a legitimate dealer in reptiles is advantaged, both in terms of expertise (more likely to do a good job of forgery) and in terms of credibility both to border inspectors (in his claim of legality) and to potential customers (in his claim that this is a wild-captured animal).

Second, the low penalties for wildlife smuggling act as an incentive for specialisation. There has been a constant stream of complaints that wildlife smugglers are sentenced to very short prison terms; the FWS reports mention sentences of just a few months, contrasting with drug smugglers' sentences of 5 years or more.<sup>63</sup> By far, the most common penalties mentioned in the Annual Reports are fines, often no more than \$10,000, plus confiscation of the smuggled goods. Thus, to participate in this trade it is not necessary to be willing to take large penal risks for large rewards; it is that willingness to take enforcement risks that gives criminal offenders in other high enforcement activities the incentive to diversify. In contrast, the specialist wildlife dealer in the legitimate market with a willingness to break rules can do so without concern about spending a large share of his career in prison.

It is not just that judicially imposed penalties are low. The risks of detection are modest. The 300 FWS inspectors are distributed across 37 offices. There are seasons when many of these officials are diverted to enforcement of domestic wildlife law, as for example during the duck-hunting season. Again, this low risk of detection encourages entry of a wider range of participants than criminal activities subject to vigorous government enforcement.

A third factor is the skill requirements themselves, at least in some fields; there may be some that have not emerged in investigation or research that do not require skill. While a high mortality rate for smuggled creatures, lizards, birds, or other species is an accepted cost of the business, those who can keep the mortality rate down are advantaged as lower-cost suppliers. These skills may not be so easily acquired. Other criminal smuggling activities certainly involve particular skills; the question is whether they overlap much with the ones most useful for wildlife smuggling.

A possible configuration for the wildlife trade is one in which specialised smugglers work for criminal organisations that either extort them or offer services that complement

the smugglers' competencies. For example, one could imagine that drug trafficking organisations or coyotes (human smugglers) become suppliers of wildlife to the smugglers. After all, both drug smugglers and coyotes now have large networks in some of the countries that provide rare species. They might serve as the middlemen between the buyers in regional markets and the importers in the United States.<sup>64</sup> That might allow them to extort the smugglers, capturing all the rents that are available in the chain, as suggested in industrial organisation textbooks.<sup>65</sup> While this is a logical possibility, and has been observed in some other industries, there are no observations that support this for wildlife smuggling.

The fourth factor, which may be the most important in encouraging specialisation, is the relatively small scale of the industry across the Western Hemisphere. Except for the caviar cases described above, all the data that are available, whether in the thin research literature or based on the more voluminous record of federal investigations, points to enterprises that achieve revenues of at most hundreds of thousands of dollars per annum rather than millions. Though it would be foolish to claim the ability to estimate the industry total, what follows are the pieces of evidence that suggest it is likely to be small relative to other major illegal markets.

We return again to *The Lizard King* for insight. There seems no challenge to the statement that Michael van Nostrand was the most significant entrepreneur in the reptile trade, both legal and illegal, in the United States in the 1990s. Yet, describing him just 2 years before his operation was shut down, Christy says '[n]ot even twenty-five years old, Mike van Nostrand was pocketing over \$200,000 a year'. While impressive for someone of that age, it is hardly the stuff of fortunes, even in the early 1990s. The shipments he received were not very valuable. For example, Tomas Medina, the computer salesman from Argentina whose interception at the Miami Airport was the start of van Nostrand's downfall, brought in about 350 turtles and snakes; this large number was valued at less than \$10,000 at market price (p.16), equivalent to about a half kilogram of cocaine at import prices.

Lowther et al. presented major cases of the prior decade for the United States. One of the four cases they presented (which included the caviar case) was summarised as follows:

In July 2000, the first criminal prosecution for shahtoosh offences in the US saw Navarang Exports of Mumbai, India, together with former senior officers of Cocoon North America, plead guilty to smuggling shawls. The crimes, committed in 1994 and 1995, involved smuggling 308 shawls from India to the US, with Cocoon acting as the US agent and in some cases re-exporting items to France. The US FWS estimated that at least 1000 Tibetan antelope were needed to produce the shawls. Their retail value was estimated at US\$246,400 (£160,000), and sales included a charity event in New York City where approximately US \$100,000 (£65,000) worth of shawls were auctioned.

Consider a few other indicators of the small scale of this market. Cantu et al. estimate that 3000–10,000 Mexican parrots are illegally exported to the United States annually. Take the upper bound of 10,000 and a high-end estimate of the market value of a single parrot, \$1000 (only available for very rare species). The total market size is then no more than \$10 million.<sup>66</sup>

Smugglers earn high margins, with a US retail price ten times that of the cost of acquisition in the country of origin; in that respect, the markets are like those for cocaine and heroin. Nonetheless, the market may simply be too small to make entry worthwhile for organisations that already engage in major smuggling activities such as drugs or weapons trafficking. For the United States, those markets involve tens of billions of dollars in retail sales.<sup>67</sup>

## 6. Wildlife and smuggling networks

We start by noting a limitation of the study, namely that it did not include two potentially large kinds of smuggling of protected species, namely timber for commercial purposes (primarily construction) and fish for consumption (e.g. bluefin tuna above specified catch limits). The statements that follow with respect to organisation are probably unaffected by this limitation but statements about revenues may well be.

As we have noted, there are numerous broad statements claiming that wildlife smuggling, both out of Latin America and more generally, is tied to other kinds of organised criminal activity. This illegal trade is routinely asserted to be one of the two or three most important after drug smuggling, though not a single one of these statements is accompanied by citation to a credible source or empirical data that documents a systematic basis for the claimed numbers. The claimed connection between cocaine smuggling and wildlife trafficking would be particularly relevant for Latin America, including Colombia and Mexico, since those countries account for almost all of US imports of illegal drugs, including cocaine, heroin, marijuana, and methamphetamine.

Beyond these broad statements, though, there is nothing in the literature, academic, grey, or popular, that supports the claims of strong connections between wildlife smuggling and other contraband activities. There are cases in which legitimate wildlife shipments are used to conceal contraband. That indicates opportunism on the part of smugglers of drugs or precious stones rather than a connection between various kinds of smuggling.

We have emphasised throughout this study the low risks of detection and of penalties faced by wildlife smugglers. The record penalty, through 2001, for a convicted smuggler was 8 years and 9 months, imposed in 1994.<sup>68</sup> Many offenses, as noted earlier, seem to result in nothing more than a fine or probation. These differ greatly from the penalties that would be imposed on any smuggler caught smuggling illicit narcotics.

Neither corruption nor violence, common elements of the environment and behaviour of criminal organisations, play any consistent role in the descriptions of wildlife smuggling in the popular literature or are mentioned in the cases developed by the Department of Justice. There may be corruption in the countries of export; indeed US authorities were almost certain that Anson Wong (Michael van Nostrand's principal foreign partner in Asia) had paid Malaysian authorities to allow him to smuggle. There were, however, no allegations concerning payments to officials in the United States; that may well have reflected the low intensity of enforcement, rendering protection unnecessary.

Perhaps wildlife smugglers, those who actually bring the animals into the United States, are adaptable. Reuter and Haaga<sup>69</sup> report that among those involved in marijuana and cocaine smuggling in the 1980s, there were individuals whose professional capacities were smuggling of whatever was the most profitable commodity along the route in which they specialised; they had smuggled parrots or emeralds out of Colombia, and now they were smuggling some white powder. They clearly were adaptable and it is possible to imagine that they would fancy the challenge of smuggling some new goods that required a different kind of technical ingenuity. If that sector existed then, there is no evidence that it does so now.

The technological inventiveness of the sector may be limited by the low intensity of enforcement. Whereas, drug smugglers have to constantly adapt to the new technologies (e.g. heat-directed surveillance monitors) and strategies of the interdiction agencies (including the US Coast Guard and Navy), wildlife smugglers have faced only a modest and stagnant interdiction threat, with little undercover capability. On the other hand,

wildlife smuggling is a far less criminalised activity and one that would carry significantly less stigma; the cargo, furthermore, is significantly more delicate and perishable and requires the employment of more professional staff to ensure prompt, safe delivery. The market as well may be segmented, and people with less skill and ability to care for animals/fruits/etc. for less pay may also operate.

In addition, as noted in the first section of the study, wildlife smugglers do have a fundamentally more delicate technical task than drug smugglers. The skills with false documents may be particularly valuable.

The available literature on wildlife smuggling emphasises its connection to a community of devotees. Orchid lovers obsess about their flowers, and are constantly looking for boasting rights in exhibitions. Lizard fanciers relish exoticness. The number of prospective consumers for these goods is typically small. Of course, the suppliers have different motivations. Indeed, given that so many of the creatures they smuggle die in the course of shipment, it may be hard to recruit a devotee for such an endangering activity.

There is no suggestion that any political organisation such as Colombia's FARC, active in the cocaine trade for several years now, is involved in wildlife smuggling. From the other end, the customers for the smuggled species are apolitical, merchants supplying legitimate markets, with stakes in the legal system. These groups share negligible mutual interests, and thus the involvement of violent political groups or organised crime networks as suppliers seems improbable.

In conclusion, wildlife smuggling in the Western Hemisphere appears to be a small-scale activity, with strong links to legitimate businesses, operating in a low risk and technologically narrow environment. The principal concern is that due to such modest enforcement levels, knowledge of the industry is minimal; there may be sectors of the trade in the Americas that are more highly organised and able to avoid detection. We judge that unlikely but there is no way to deny the possibility.

### **Disclosure statement**

No potential conflict of interest was reported by the authors.

### **Funding**

The research underlying this paper was supported the U.S. Department of Homeland Security [Task Order #: HSHQDC-10-J-00473, Contract #: IAA HSHQDC-10-D-00023], made to the National Consortium for the Study of Terrorism and Responses to Terrorism (START). The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Department of Homeland Security or START.

### **Notes**

1. The White House, "Combating Wildlife Trafficking."
2. Wasser et al., "Combating the Illegal Trade."
3. Fuller, "Notorious Figure in Animal Smuggling."
4. The term organised crime is often used in statutes (throughout the world) to refer to any criminal activity involving three or more participants; for a discussion of this see Dorn, Levi and King. That definition is far from the common understanding of the term and robs it of legal and policy significance. Much wildlife smuggling would meet this minimal definition of organised crime but lacks the other dimensions of durability, breadth of criminal activity,

- capacity for contingent violence or for corruption. See Reuter for a discussion of these aspects. Dorn, Levi and King, *High Level Drug Trafficking*; and Reuter, *Disorganised Crime*.
5. For example ‘The illegal wildlife trade is estimated to be valued somewhere between \$10 and \$20 billion.’ Galster, “National Zoo, Lectures and Symposia.” As is often quoted, this figure places wildlife trafficking second to the drug trade in profitability (“The Wildlife Trade”). South and Wyatt, “Comparing Illicit Trades,” 540.
  6. Reuter and Caulkins, “Purity, Price and Production.”
  7. See for example a report of the Pew Environmental Center: Global Tuna Conservation Project, “Illegal Fishing of Bluefin Tuna.”
  8. ‘The Lacey Act, 16 USC. §§ 3371-3378, protects both plants and wildlife by creating civil and criminal penalties for a wide array of violations. Most notably, the Act prohibits trade in wildlife, fish, and plants that have been illegally taken, possessed, transported or sold. Thus, the Act underscores other federal, state, and foreign laws protecting wildlife by making it a separate offense to take, possess, transport, or sell wildlife that has been taken in violation of those laws. The Act prohibits the falsification of documents for most shipments of wildlife (a criminal penalty) and prohibits the failure to mark wildlife shipments (civil penalty). The Lacey Act is administered by the Departments of the Interior, Commerce, and Agriculture through their respective agencies. These include the US Fish and Wildlife Service, National Marine Fisheries Service, and Animal and Plant Health Inspection Service’. Wisch, “Overview of the Lacey Act.”
  9. Petrossian, Pires, and Daan, “Overview of Seized Illegal Wildlife,” 8; and Barber-Meyer, “Dealing with the Clandestine.”
  10. “What Is a Systematic Review?”
  11. South and Wyatt, “Comparing Illicit Trades.”
  12. Pires and Clarke, “Are Parrots Craved?”; and Pires and Clarke, “Sequential Foraging, Itinerant Fences.”
  13. In this respect, it may be similar to the trade in antiquities in the region.
  14. Pires, Schneider, and Herrera, “Organized Crime or Crime that is Organized.”
  15. Pires, “The Heterogeneity of Illicit Parrot Markets.”
  16. Regueira, Silva, and Bernard, “Wildlife Sinks,” 21.
  17. *Ibid.*, 17.
  18. Zimmerman, “The Black Market for Wildlife.”
  19. Petrossian, Pires, and Daan, “Overview of Seized Illegal Wildlife,” 11.
  20. Steinberg, “Illicit Abalone Trade in South Africa.”
  21. Nijman, “Overview of International Wildlife Trade.”
  22. Phelps and Webb, “‘Invisible’ Wildlife Trades,” 302.
  23. Alacs and Georges, “Wildlife Across our Border”; Koski, “Handle with Care”; and Yiming and Dianmo, “Dynamics of Trade in Live Wildlife.”
  24. “Going, Going Gone.”
  25. Guzmán et al., “Illegal Parrot Trade in Mexico.”
  26. *Ibid.*, 89.
  27. Wright et al., “Nest Poaching in Neotropical Parrots.”
  28. Goyenechea and Indenbaum, “Combating Wildlife Trafficking.” This piece uses LEMIS data, not CITES data. However, the two databases are similar in how incidents are catalogued and coded and both are collected by the U.S. Fish and Wildlife Service. We conclude that the problems identified in Blundell and Mascia likely apply to LEMIS data, given their shared source.
  29. Burgess, Stoner, and Foley, “Brought to Bear.”
  30. Blundell and Mascia, “Discrepancies in Reported Levels of International Wildlife Trade.”
  31. Fitzgerald et al., “Collection, Trade, and Regulation,” 34.
  32. Wyler and Sheikh, “International Illegal Trade in Wildlife.”
  33. *Ibid.*
  34. Hayman and Brack, “Workshop Report”; “Organized Criminal Gangs Deal”; and Cook, Roberts and Lowther, *Wildlife Trade and Organised Crime*.
  35. Phone interview with John K. Webb, August 14, 2012.
  36. Cook, Roberts, and Lowther, “Wildlife Trade and Organised Crime.”
  37. Hayman and Brack, “Workshop Report.”
  38. *Ibid.*, 7.
  39. Lichtenwald, Perri and MacKenzie, “Smuggling Multi-Consignment Contraband.”

40. Christy, *The Lizard King*; and Smith, *Stolen World*.
41. Fish and Wildlife Service, *Annual Report*.
42. The Annual Report of the CBP makes negligible specific references to enforcement of the wildlife laws as part of the CBP mission. It is included by reference in the term 'contraband'. None of the cases highlighted in the 2011 Report involved wildlife. Each case in which a wildlife seizure was reported in a CBP press release stated that it was handed over to the FWS. The State Department-led Coalition Against Wildlife Trafficking (CAWT) lists only FWS among domestic agencies as part of the coalition. Available at <http://www.cawtglobal.org/usa/>, accessed November 7, 2015.
43. National Oceanic and Atmospheric Administration, "Workforce Analysis and Staffing Allocation."
44. Fish and Wildlife Service, *Annual Report FY 2008*, 12.
45. Fish and Wildlife Service, *Annual Report FY 2009*, 10.
46. Fish and Wildlife Service, *Annual Report FY 2008*, 8.
47. Fish and Wildlife Service, "*Wildlife Trafficking Investigations 2006–2010*."
48. For a summary of the series, Environment and Natural Resources Division, "Caviar Prosecutions."
49. Fish and Wildlife Service, "Accomplishments 2013–2014," 3.
50. University at Albany, "Sourcebook of Criminal Justice Statistics."
51. For example, the 2009 Report gives the special agent workforce as 195 and the inspector workforce as 116.
52. Christy, *The Lizard King*, 79–80 tells the story of an aggressive FWS agent bringing a wildlife case to an Assistant US Attorney in Miami and being told that it was too trivial to warrant a felony prosecution.
53. INTERPOL Environmental Security Sub-Directorate, "National Environmental Security Task Force," 5.
54. "Operations." Accessed November 8, 2015. <http://www.interpol.int/Crime-areas/Environmental-crime/Operations>
55. Christy, *The Lizard King*.
56. "JFK smuggling singing birds," *Stabroek News*.
57. "Illegally Killed for Meat," *Wildlife Extra*.
58. "Smuggling Sea Turtle Skins," *Environment News Service*.
59. U.S. Attorney's Office for the Southern District of Florida, "Press Release."
60. The CBP's annual report for fiscal year 2014 does note that 1,623,294 seizures of 'prohibited plant and animal materials' were made at ports of entry, but provides no further elaboration as to whether these were criminal acts or simply items declared and seized from passengers. The terms 'animal' or 'wildlife' are mentioned nowhere else in the 172 page report. See Customs and Border Protection, *Performance and Accountability Report, Fiscal Year 2014*.
61. Fish and Wildlife Service, *Wildlife Trafficking Investigations 2006–2010*.
62. Christy, *The Lizard King*.
63. In 2010 the average length of sentence for drug dealers sentenced to prison in federal courts was 6.5 years. University at Albany, "Sourcebook of Criminal Justice Statistics."
64. Pires and Clarke, "Are Parrots Craved?"; and Pires and Clarke, "Sequential Foraging, Itinerant Fences."
65. Scherer and Ross, *Industrial Market Structure and Economic*.
66. Guzmán et al., *Illegal Parrot Trade in Mexico*.
67. For estimates of the value of retail sales, *What America's Users Spend on Illegal Drugs*.
68. Lowther, Cook, and Roberts, "Crime and Punishment in the Wildlife Trade."
69. Reuter and Haaga, "High-Level Drug Markets."

### Notes on contributors

Peter Reuter is Professor in the School of Public Policy and Department of Criminology at the University of Maryland, as well as a Senior Economist with RAND's Drug Policy Research Center. Trained as an economist, his work has dealt with a variety of illegal markets. Dr Reuter has published extensively on drug policy, notably in *Drug War Heresies: Learning from Other Vices, Times and Places* (with Robert MacCoun). He was the founding president of the International Society for the Study of Drug Policy from 2007–2010. His current research is focused on the consequences of efforts to control money

laundering.

Davin O'Regan is a PhD student in the School of Public Policy at the University of Maryland. His research interests focus on the effects of illegal markets on security and stability in developing countries.

## Bibliography

- Alacs, E., and A. Georges. "Wildlife across Our Borders: A Review of the Illegal Trade in Australia." *Australian Journal of Forensic Sciences* 40, no. 2 (December, 2008): 147–160. doi:10.1080/00450610802491382.
- "As Many as 1 Million Conch Shells Illegally Killed for Meat." *Wildlife Extra*, September, 2007. <http://www.wildlifeextra.com/go/news/conch-imports129.html#cr>
- Barber-Meyer, S. M. "Dealing with the Clandestine Nature of Wildlife-Trade Market Surveys: Hidden Trade in Wildlife Market Surveys." *Conservation Biology* 24, no. 4, April 8 (2010): 918–923. doi:10.1111/j.1523-1739.2010.01500.x.
- Beirne, P., and N. South. *Issues in Green Criminology: Confronting Harms against Environments, Humanity and Other Animals*. Devon: Willan Pub., 2007.
- Blundell, A. G., and M. B. Mascia. "Discrepancies in Reported Levels of International Wildlife Trade." *Conservation Biology* 19, no. 6, December (2005): 2020–2025. doi:10.1111/cbi.2005.19.issue-6.
- Burgess, E. A., S. S. Stoner, and K. E. Foley. *Brought to Bear: An Analysis of Seizures across Asia (2000–2011)*. Petaling Jaya, Selangor: TRAFFIC, 2014.
- Christy, B. *The Lizard King: The True Crimes and Passions of the World's Greatest Reptile Smugglers*. 1 Reprint edition. New York: Twelve, 2009.
- Cook, D., M. Roberts, and J. Lowther. *The International Wildlife Trade and Organised Crime: A Review of the Evidence and the Role of the UK*. Surrey: World Wildlife Fund UK, 2002. June.
- Customs and Border Protection. *Performance and Accountability Report, Fiscal Year 2014*. Washington, DC: U.S. Department of Homeland Security, 2014. [http://www.cbp.gov/sites/default/files/documents/CBP\\_DHS\\_2014%20PAR\\_508C.PDF](http://www.cbp.gov/sites/default/files/documents/CBP_DHS_2014%20PAR_508C.PDF).
- Customs and Border Protection. *Summary of Performance and Financial Information: Fiscal Year 2011*. Washington, DC: U.S. Customs and Border Protection. Accessed November 7, 2015. [https://www.cbp.gov/sites/default/files/documents/fy2011\\_finance\\_3.pdf](https://www.cbp.gov/sites/default/files/documents/fy2011_finance_3.pdf).
- Dorn, N., M. Levi, and L. King. *NCJRS Abstract - National Criminal Justice Reference Service*. London: The Home Office, Government of the United Kingdom, 2005. <https://www.ncjrs.gov/App/publications/abstract.aspx?ID=209441>.
- ENS. "Organized Criminal Gangs Deal Wildlife and Drugs." *Environment News Service*, June 18, 2002. Accessed November 5, 2015. <http://www.ens-newswire.com/ens/jun2002/2002-06-18-01.html>
- Environment and Natural Resources Division. "Caviar Prosecutions." U.S. Department of Justice. Accessed August 28, 2012. <http://www.justice.gov/enrd/caviar-prosecutions>
- Fish and Wildlife Service. *Annual Report FY 2008*. Washington, DC: U.S. Department of Interior, 2008. <http://www.fws.gov/le/pdf/final-annual-report-fy-2008.pdf>.
- Fish and Wildlife Service. *Annual Report FY 2009*. Washington, DC: U.S. Department of Interior, 2009. <http://www.fws.gov/le/pdf/final-annual-report-fy-2009.pdf>.
- Fish and Wildlife Service. *Annual Report FY 2010*. Washington, DC: U.S. Department of Interior, 2010. <http://www.fws.gov/le/pdf/final-annual-report-fy-2010.pdf>.
- Fish and Wildlife Service. *Annual Report FY 2011*. Washington, DC: U.S. Department of Interior, 2011. <http://www.fws.gov/le/pdf/final-annual-report-fy-2011.pdf>.
- Fish and Wildlife Service. *Wildlife Trafficking Investigations 2006-2010 Highlights*. Washington, DC: U.S. Department of Interior, 2011. <http://www.globaltigerinitiative.org/download/ELF/session-papers-and-presentations/International-Investigative-Highlights-2006-2010.pdf>.
- Fish and Wildlife Service. *2012 Annual Report*. Washington, DC: U.S. Department of Interior, 2012. <http://www.fws.gov/le/pdf/final-annual-report-fy-2012.pdf>.
- Fish and Wildlife Service. *Accomplishments 2013-2014*. Washington, DC: U.S. Department of Interior, 2014. <http://www.fws.gov/le/pdf/final-annual-report-fy-2013-2014.pdf>.
- Fitzgerald, L. A., C. W. Painter, A. Reuter, and C. Hoover. *Collection, Trade, and Regulation of Reptiles and Amphibians of the Chihuahuan Desert Ecoregion*. Washington, DC: TRAFFIC North America, 2004. August.

- Fuller, T. 2013. "Notorious Figure in Animal Smuggling, Beyond Reach in Laos." *The New York Times*, March 3.
- Galster, S. 2008. "National Zoo, Lectures and Symposia." *The Smithsonian Institution*. <http://nationalzoo.si.edu/ActivitiesAndEvents/Lectures/>
- Global Tuna Conservation Project. "Illegal Fishing of Bluefin Tuna." *The Pew Charitable Trusts*. Accessed October 10, 2011. <http://www.pewtrusts.org/en/imported-old/other-resources/2011/10/10/illegal-and-unreported-fishing-of-bluefin-tuna>
- "Global Tuna Conservation." *The Pew Charitable Trusts*. Accessed November 5, 2015. <http://www.pewtrusts.org/en/projects/global-tuna-conservation>
- Goyenechea, A., and R. A. Indenbaum. *Combating Wildlife Trafficking from Latin America to the United States*. Washington, DC: Defenders of Wildlife, 2015.
- "Guyanese Held at JFK Smuggling Singing Birds - Stabroek News." *Stabroek News*, July 25, 2008. <http://www.stabroeknews.com/2008/archives/07/25/guyanese-held-at-jfk-smuggling-singing-birds/>
- Guzmán, J. C. C., M. E. S. Saldaña, A. C. M. Grosselet, and J. S. Gamez. *The Illegal Parrot Trade in Mexico: A Comprehensive Assessment*. Washington, DC: Defenders of Wildlife, 2007. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.220.5485&rep=rep1&type=pdf>.
- Hayman, G., and D. Brack. *Workshop Report*. London: Royal Institute of International Affairs, 2002. [http://ec.europa.eu/environment/archives/docum/pdf/02544\\_environmental\\_crime\\_workshop.pdf](http://ec.europa.eu/environment/archives/docum/pdf/02544_environmental_crime_workshop.pdf).
- Humane Society International (Australia). "Wildlife Trade." Accessed September 25, 2008. <http://www.hsi.org.au/go/to/67/wildlife-trade.html>
- INTERPOL. 2014. "National Environmental Security Task Force: Bringing Compliance and Enforcement Agencies Together to Maintain Environmental Security." *Subdirectorato on Environmental Security*, INTERPOL, February.
- INTERPOL. 2015. "Operations: Environment Crimes." *Subdirectorato on Environmental Security*, INTERPOL. <http://www.interpol.int/Crime-areas/Environmental-crime/Operations>
- Kilmer, B., S. Everingham, J. Caulkins, G. Midgette, R. Pacula, P. Reuter, R. Burns, B. Han, and R. Lundberg. *What America's Users Spend on Illegal Drugs: 2000–2010*. Washington, DC: Executive Office of the U.S. President, February, 2014. [https://www.whitehouse.gov/sites/default/files/ondcp/policy-and-research/wausid\\_results\\_report.pdf](https://www.whitehouse.gov/sites/default/files/ondcp/policy-and-research/wausid_results_report.pdf).
- Koski, P. "Handle with Care: The Lethal, Yet Ignored, Threat of Illegal International Animal Trafficking." *The Stanford Journal of International Relations* 8, no. 1 Winter, (2007): 49–50.
- Lichtenwald, T. G., F. S. Perri, and P. MacKenzie. "Smuggling Multi-Consignment Contraband." *Inside Homeland Security* 7, no. 2 (Summer, 2009): 17–31.
- Lowther, J., D. Cook, and M. Roberts. 2002. "Crime and Punishment in the Wildlife Trade." *World Wildlife Fund UK and TRAFFIC*, August 5. [http://www.wwf.org.uk/filelibrary/pdf/crime\\_and\\_punishment.pdf](http://www.wwf.org.uk/filelibrary/pdf/crime_and_punishment.pdf)
- National Oceanic and Atmospheric Administration. *Workforce Analysis and Staffing Allocation Plan*. Washington, DC: U.S. Department of Commerce, May, 2012. [http://www.nmfs.noaa.gov/ole/docs/2012/ole\\_workforce\\_analysis\\_plan.pdf](http://www.nmfs.noaa.gov/ole/docs/2012/ole_workforce_analysis_plan.pdf).
- Nijman, V. "An Overview of International Wildlife Trade from Southeast Asia." *Biodiversity and Conservation* 19, no. 4, December 23 (2010): 1101–1114. doi:10.1007/s10531-009-9758-4.
- Petrossian, G. A., S. F. Pires, and D. P. Van Uhm. "An Overview of Seized Illegal Wildlife Entering the United States." *Global Crime* 17, no. 2 (March 7, 2016): 1–21.
- Phelps, J., and E. L. Webb. "'Invisible' Wildlife Trades: Southeast Asia's Undocumented Illegal Trade in Wild Ornamental Plants." *Biological Conservation* 186, June (2015): 296–305. doi:10.1016/j.biocon.2015.03.030.
- Pires, S. F. "The Heterogeneity of Illicit Parrot Markets: An Analysis of Seven Neo-Tropical Open-Air Markets." *European Journal on Criminal Policy and Research* 21, no. 1 (2015): 151–166. doi:10.1007/s10610-014-9246-6.
- Pires, S. F., and R. V. Clarke. "Sequential Foraging, Itinerant Fences and Parrot Poaching in Bolivia." *The British Journal of Criminology* 51, no. 2, March 1 (2011): 314–335. doi:10.1093/bjc/azq074.
- Pires, S., and R. V. Clarke. "Are Parrots CRAVED? An Analysis of Parrot Poaching in Mexico." *Journal of Research in Crime and Delinquency* 49, no. 1 February 1 (2012): 122–146. doi:10.1177/0022427810397950.

- Pires, S. F., J. L. Schneider, and M. Herrera. "Organized Crime or Crime That Is Organized? The Parrot Trade in the Neotropics." *Trends in Organized Crime* 19, no. 1 (March 2016): 4–20.
- Regueira, R. F. S., and E. Bernard. "Wildlife Sinks: Quantifying the Impact of Illegal Bird Trade in Street Markets in Brazil." *Biological Conservation* 149, no. 1, May (2012): 16–22. doi:10.1016/j.biocon.2012.02.009.
- Reuter, P. *Disorganized Crime: The Economics of the Visible Hand*. Cambridge, MA: MIT Press, 1983.
- Reuter, P., and J. P. Caulkins. "Purity, Price and Production: Are Drug Markets Different?" In *Illicit Trade and the Global Economy*, edited by C. C. Storti and P. De Grauwe, 8–27. Cambridge, MA: MIT Press, 2011.
- Reuter, P., and J. Haaga. "The Organisation of High-Level Drug Markets: An Exploratory Study." RAND Note. Santa Monica: RAND, February, 1989. <https://www.rand.org/content/dam/rand/pubs/notes/2006/N2830.pdf>
- Scherer, F. M., and D. R. Ross. *Industrial Market Structure and Economic Performance*. Boston, MA: Houghton Mifflin Company, 1990.
- Shanee, N. "Trends in Local Wildlife Hunting, Trade and Control in the Tropical Andes Biodiversity Hotspot, Northeastern Peru." *Endangered Species Research* 19, no. 2 (2012): 177–186. doi:10.3354/esr00469.
- Smith, J. E. *Stolen World: A Tale of Reptiles, Smugglers, and Skulduggery*. 1st ed. New York, NY: Crown, 2011.
- South, N., and T. Wyatt "Comparing Illicit Trades in Wildlife and Drugs: An Exploratory Study." *Deviant Behavior* 32, no. 6 (July, 2011): 538–561. doi:10.1080/01639625.2010.483162.
- Steinberg, J. "The Illicit Abalone Trade in South Africa." In *Deviant Globalization: Black Market Economy in the 21st Century*, edited by N. Gilman, J. Goldhammer, and S. Weber. New York: The Continuum International Publishing Group, 2011.
- "Texas Boot Dealer Jailed for Smuggling Sea Turtle Skins." *Environment News Service*. Accessed June 2, 2008. <http://www.ens-newswire.com/ens/jun2008/2008-06-02-094.html>
- The Campbell Collaboration. "What Is a Systematic Review?" Accessed November 5, 2015. [http://www.campbellcollaboration.org/what\\_is\\_a\\_systematic\\_review/](http://www.campbellcollaboration.org/what_is_a_systematic_review/).
- "The Illegal Logging Crisis in Honduras." *Environmental Investigation Agency*. Accessed October 26, 2005. <http://www.eia-international.org/wp-content/uploads/Honduras-Report-English-low-res.pdf>
- The President's Advisory Council on Wildlife Trafficking*. Washington, DC: President's Advisory Council on Wildlife Trafficking, June 9, 2014. [http://webcache.googleusercontent.com/search?q=cache:GGeQsR\\_60XQJ:https://www.fws.gov/international/advisory-council-wildlife-trafficking/pdf/advisory-council-recommendations-06-09-14.pdf+&cd=5&hl=en&ct=clnk&gl=us](http://webcache.googleusercontent.com/search?q=cache:GGeQsR_60XQJ:https://www.fws.gov/international/advisory-council-wildlife-trafficking/pdf/advisory-council-recommendations-06-09-14.pdf+&cd=5&hl=en&ct=clnk&gl=us).
- The White House. "The National Strategy for Combating Wildlife Trafficking." Executive Office of the U.S. President. Accessed February 11, 2014. <https://www.whitehouse.gov/sites/default/files/docs/nationalstrategywildlifetrafficking.pdf>
- The World Bank. "Going, Going Gone: The Illegal Trade in Wildlife in East and Southeast Asia." Environment and Social Development East Asia and Pacific Region Discussion Paper. Washington, DC: The World Bank, July, 2005. [http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2005/09/08/000160016\\_20050908161459/Rendered/PDF/334670PAPER0GoingIgoingIgone.pdf](http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2005/09/08/000160016_20050908161459/Rendered/PDF/334670PAPER0GoingIgoingIgone.pdf)
- U.S. Attorney's Office for the Southern District of Florida. "Press Release: Smugglers Sentenced in Counterfeit Smith & Wesson Medallion Case." U.S. Department of Justice. Accessed February 17, 2010. <http://www.justice.gov/archive/usao/fls/PressReleases/2010/100217-02.html>
- U.S. Sentencing Commission. "Individual Offender Datafiles, 2005-2014." <http://www.uscc.gov/research-and-publications/commission-datafiles>
- University at Albany, Hindelang Criminal Justice Research Center. "Sourcebook of Criminal Justice Statistics. Table 5.38.2010." Accessed November 7, 2015. <http://www.albany.edu/sourcebook/pdf/t5382010.pdf>
- Walby, K. "Book Review: 'Issues in Green Criminology: Confronting Harms Against Environments, Humanity and Other Animals.'" *Political Media Review*, July 2007. <http://www.politicalmediareview.org/2009/03/issues-in-green-criminology-confronting-harms-against-environments-humanity-and-other-animals/>

- Wasser, S. K., W. J. Clark, O. Drori, E. S. Kisamo, C. Mailand, B. Mutayoba, and M. Stephens. "Combating the Illegal Trade in African Elephant Ivory with DNA Forensics." *Conservation Biology* 22, no. 4, August 1 (2008): 1065–1071. doi:10.1111/j.1523-1739.2008.01012.x.
- Wisch, R. F. 2003. "Overview of the Lacey Act (16 U.S.C. SS 3371-3378)." Animal Legal & Historical Center of the Michigan State University College of Law. Accessed November 5, 2015. <https://www.animallaw.info/article/overview-lacey-act-16-usc-ss-3371-3378>
- Wright, T. F., C. A. Toft, E. Enkerlin-Hoeflich, J. Gonzalez-Elizondo, M. Albornoz, A. Rodríguez-Ferraro, F. Rojas-Suárez, et al. "Nest Poaching in Neotropical Parrots." *Conservation Biology* 15, no. 3 (June 7, 2001): 710–720. doi:10.1046/j.1523-1739.2001.015003710.x.
- Wylar, L. S., and P. A. Sheikh. "International Illegal Trade in Wildlife: Threats and US Policy." Congressional Research Service. Accessed March 3, 2008. <http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA486486>
- Yiming, L., and L. Dianmo. "The Dynamics of Trade in Live Wildlife across the Guangxi Border between China and Vietnam during 1993–1996 and Its Control Strategies." *Biodiversity & Conservation* 7, no. 7 (1998): 895–914. doi:10.1023/A:1008873119651.
- Zimmerman, M. E. "The Black Market for Wildlife: Combating Transnational Organized Crime in Illegal Wildlife Trade." *Vanderbilt Journal of Transnational Law* 36, no. 5 (November, 2003): 1657–1690.

### Appendix. Search strategy for literature review

There are two important elements to this search activity; the specification of inclusion and exclusion criteria and the description of the search terms and databases.

#### *Inclusion/exclusion criteria*

- (1) Cases of domestic animal smuggling, and smuggling across the Canadian border are not included in this project. That border has not historically been subject to much scrutiny, and there is no claim of widespread wildlife smuggling from or to Canada.
- (2) The following general incidents can be used in this study: International illegal live animal smuggling, international illegal animal product smuggling, and international illegal fishing smuggling.
- (3) Cases involving the illegal timber market are not included in this study.
- (4) If the source describes a specific incident, group, or trade route relating to international wildlife smuggling, at least one 'leg' of the route, the group or the interdiction incident must have taken place in Central or South America or en route to the USA from Central/South America.
- (5) Any description of either domestic or international regulations that pertain to endangered species sale, or smuggling of protected wildlife, which are relevant to the USA, Central America or South America, are included in this project.
- (6) The perpetrators of any cases of international wildlife trade must have some connection to Central or South America in order to be included in this project.
- (7) Any indication of the size or scale of the illegal wildlife trade market, specifically the market that exists between the USA and South/Central America, should be included.

#### *Search strategy*

Focus was placed on legal documents and government reports pertaining to the incidents or market that exists for illegal wildlife between the USA and South/Central America. This included an extensive search of case briefs recorded by the US Department of Justice.

There was also an extensive search of documents provided by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) website.

Searches of a similar depth and style as those done on the CITES website were conducted for the following organisations' websites: World Wildlife Fund, TRAFFIC Committee, Administrative Office of the US Courts, US Sentencing Commission, and the US Department of Fish and Wildlife.

Any book sources that appeared relevant to this study were likewise sought out. Finally, a Google scholar search was performed, with the search terms being key words common amongst relevant documents. Key words could include 'animal smuggling', 'wildlife trafficking', any combination of those, or specific searches on CITES regulations, and any other relevant domestic or international law.

For any source that was deemed relevant to this study:

- (a) Any relevant legal cases that were cited in any sources were sought out.
- (b) In any of the acquired sources, a review was done of all of the sources that each report cited, and where relevant, those reports were acquired.

For any additional legal cases, the following search was performed:

- (a) An open source search on sites such as Google, FindLaw, LexisNexis and Factiva for names of people convicted of wildlife crimes (found during source searching) as well as US Code violations that are commonly cited when charging perpetrators with wildlife crimes. These code violations could be from the Endangered Species Act, the Lacey Act, laws regulating international smuggling, or other pertinent laws.
- (b) A search for the specific cases that were cited in the above sources, but that could not be found in open source searches, on the database 'RECAP' was also performed. RECAP is an attachment onto the Mozilla Firefox browser that allows files from the pay-per-view 'PACER' database to be viewed without charge.

Coding and Analysis of Sources:

- (1) Number of relevant legal cases, as well as the number of relevant government reports that describe the market, regulations, law enforcement capabilities or perpetrators themselves.
- (2) Size of the market
- (3) Smuggling routes and points of entry into the US for smugglers
- (4) Common countries that serve as reservoirs for the black market trade
- (5) Dynamics and characteristics of the perpetrators
- (6) Common smuggling methods and ways perpetrators use to avoid detection.