

# Wildlife trafficking on the internet: a virtual market similar to drug trafficking?

*El tráfico de fauna silvestre por internet: ¿un mercado comparado con el tráfico de drogas virtual?*

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## Abstract

Over the past two decades, the rapid growth of the Internet has led to important changes in criminal activities, offering new opportunities and facilitating certain types of crime such as illegal trafficking. Wildlife trafficking, specifically, is constantly increasing worldwide and constitutes a threat not only to many species' survival but also to national and international security. The illegal trade of wildlife has been examined by researchers through many theoretical frameworks; however, the ways it has been affected by the Internet has not received a lot of attention. More so, whilst some researches suggest that the physical markets

of wildlife and drug share similarities, their respective virtual markets have not been compared yet. Thus, this article builds on an in-depth review of the current literature to not only look into these gaps but also to make recommendations for future empirical researches on the issue of animal trafficking. This article highlights the need for more empirical research on the matter of online wildlife trafficking and, falling into the green criminological perspective, argue for all the wild species to be given equal rights regardless of the threat they may face.

## Key words

Drug trafficking, environmental criminology, virtual market, illicit traffic (source: Tesouro de política criminal latinoamericana - ILANUD). Wildlife trafficking, green criminology.

## Resumen

Durante las dos últimas décadas, el rápido crecimiento de internet ha conllevado importantes cambios en las actividades criminales, ofreciendo nuevas oportunidades y facilitando algunos tipos de crímenes tales como el tráfico ilegal. El tráfico ilegal de fauna silvestre específicamente ha incrementado de manera constante en todo el mundo representando una amenaza no solamente a la supervivencia de muchas especies sino también a la seguridad nacional e internacional. El tráfico ilegal de fauna silvestre ha sido examinado por investigadores a través de varios marcos teóricos; sin embargo, las formas en las que este ha sido afectado por el internet no ha recibido mucha atención.

A pesar de que algunos investigadores sugieren que el tráfico físico de flora silvestre y el tráfico físico de drogas tienen similitudes, sus mercados virtuales respectivos no han sido comparados todavía. Por lo tanto, este artículo presenta una detallada descripción de la literatura actual a fin de analizar este vacío y de hacer recomendaciones para futuras investigaciones empíricas en el tráfico animal. Este artículo resalta la necesidad de más investigación empírica en la materia de tráfico virtual ilegal de fauna silvestre, teniendo en cuenta la perspectiva de la criminología verde por la cual se aboga para que todas las especies silvestres tengan derechos iguales independientemente de los riesgos y amenazas que estas estén afrontando.

## Palabras clave

Tráfico de estupefacientes, criminología ambiental, mercado virtual, tráfico ilícito (fuente: Tesoro de política criminal latinoamericana - ILANUD). Tráfico de vida silvestre, criminología verde.

## Resumo

Durante as duas últimas décadas, o rápido crescimento de Internet tem conduzido importantes mudanças nas atividades criminais, oferecendo novas oportunidades e facilitando alguns tipos de crimes tais como o tráfico ilegal. O tráfico ilegal de fauna silvestre especificamente tem incrementado de maneira constante em todo o mundo representando uma ameaça não somente à supervivência de muitas espécies senão também à segurança nacional e internacional. O tráfico ilegal de fauna silvestre tem sido examinado por investigadores através de vários marcos teóricos; entretanto, as formas nas que este tem sido afetado pela Internet não tem recebido muita atenção. Mesmo que

alguns investigadores sugerem que o tráfico físico de flora silvestre e o tráfico físico de drogas têm similitudes, os seus mercados virtuais respetivos não têm sido comparados ainda. Portanto, este artigo apresenta uma detalhada descrição da literatura atual de modo a analisar este vazio e de fazer recomendações para futuras investigações empíricas no tráfico animal. Este artigo ressalta a necessidade de más investigação empírica na matéria de tráfico virtual ilegal de fauna silvestre, tendo em conta a perspectiva da criminologia verde pela qual se advoga para que todas as espécies silvestres tenham direitos iguais independentemente dos riscos e ameaças que estas estão afrontando.

## Palavras-chave

Tráfico de estupefacientes, criminologia ambiental, mercado virtual, tráfico ilícito (fuente: Tesoro de política criminal latinoamericana - ILANUD). Tráfico de vida silvestre, criminologia verde.

## Introduction

Earth is undergoing a rate of extinction nearly a hundred times higher than normal (Ceballos et al., 2015) with more than a quarter of its biodiversity currently endangered, including respectively 25% and 14% of all mammals and birds species (IUCN, 2016). While some scientists warn of the earth moving towards its sixth mass extinction (see Barnosky and al., 2011), others affirm it is already happening (see Ceballos et al., 2015). Wildlife trafficking is, along with agricultural activities, pollution and climate change, one of the main causes of this issue (Maxwell, Fuller, Brooks and Watson, 2016). The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is the most important agreement addressing wildlife trafficking. It classifies threatened species according to the level of protection they need, providing so a framework to be implemented at national level by each Party. However, wildlife trafficking remains significant, and is even considered one of the most profitable illegal activities (Cao Ngoc and Wyatt, 2013) behind drug, counterfeiting and human trafficking (IFAVV, 2014a).

Illegal trade in wildlife has been examined many times by researchers through traditional criminological frameworks and, less frequently, through the lens of a more critical harm-based approach (Van Uhm, 2018). Building on the perspective of green criminology, South and Wyatt (2011) recently explored the similarities between wildlife trafficking and drug trafficking. By comparing the methods used in the both physical trades, they concluded that these markets not only share similarities at the organizational level but also, in some cases, overlap. Indeed, animals can serve as drug mules to hide drugs for both the animal and the drug to be sold on the market (Economic and Social Council United Nations, 2002; Wyler and Sheikh, 2008); the same smuggling routes can often be taken by both the traffickers (Elliott, 2009); and, finally, animals and drugs can be used as currency in a transaction such as the trading of parrots for heroin (Elliott, 2009).

Over the past two decades however, the rapid growth of the Internet has led to important changes in criminal activities, offering new opportunities and facilitating certain types of crimes such as trafficking (Kleemans, 2007). Regarding so, this paper explores the current literature to better understand the ways in which wildlife trafficking has been affected by the Internet. With few exceptions (see Lavorgna, 2014b; Sajeva, Augugliaro, Smith and Oddo, 2013; Sollund, 2016), this specific issue has been especially neglected by criminologists (Moreto and Clarke, 2013). The virtual market of wildlife trafficking is then compared with the drug one to examine their similarities and

assess whether they overlap, as their physical markets do.

The current article falls into the green criminological perspective, advocating so for a consideration of the intrinsic value of nonhuman animals beyond traditional legal definitions, and is structured as follows. First, we discuss the relevance of a green criminological perspective when it comes to wildlife trafficking, and briefly examine the key concepts and legal definitions related to the issue. Then, after an overview of the methodology, we discuss the use of Internet as a tool for illegitimate activities regarding both wildlife and drug trafficking. Finally, we examine the similarities between the two virtual markets, and conclude with recommendations to address online wildlife trafficking.

## Green criminology and the issue of wildlife trafficking

Green criminology is often defined as the study of environmental harms through criminological frameworks. However, this perspective is more than a harm-based approach serving as a meeting point between environmental issues and traditional criminology. Green criminology not only addresses issues of rights and justice regarding the environment and the nonhuman animals, but it does so while acknowledging them an intrinsic value whatever the one they are given by a society (Cao Ngoc and Wyatt, 2013). In other words, the concept of "harm" is viewed as a socially and culturally constructed one and is thus studied beyond its legal definitions (Stretesky, Long and Mill, 2013). Such a perspective is certainly relevant to the study of wildlife trafficking because the value of wild animals is not without being subjected to an anthropocentric view and, so, to some change over time regardless of the legislations in place (see Van Uhm, 2018).

The term "wildlife" refers to fauna and flora. In this article, however, we focus on the former, which relates to a variety of species including mammals, insects, birds, reptiles and fishes but excludes notably domestic animals and those submitted to exploitation for agricultural purposes (South and Wyatt, 2011). Wildlife trafficking is, thus, the crime targeting their illegal trade that involves various actions such as poaching - which includes theriocide, defined as the killing of animals by humans (Beirne, 2014), and abduction, defined as the taking of animals from their natural habitat against their will (Sollund, 2011). Other illegal actions included in the legislations are the sale and/or purchase of endangered species and any by-

products of those species whose hunting is regulated by permits or quotas (South and Wyatt, 2011).

The legal frameworks governing wildlife trafficking are mostly connected to the Convention on International Trade in Endangered Species of Wild Fauna and Flora. At the international level, CITES aims to ensure that the trading of species does not threaten their survival. It classifies species in three appendices according to the level of protection they need, and determines whether their international trade is authorized, regulated or prohibited. Appendix I lists more than 800 species considered in immediate danger of extinction and whose traffic is completely banned. Appendix II lists vulnerable species whose traffic is instead regulated with export and sometimes import permits to ensure they do not face global extinction. Appendix III, finally, lists species designated as vulnerable in specific countries and benefiting additional protection within the borders of those countries.

Wildlife trafficking is among the most lucrative illegal activities, generating annual global profits estimated between US\$5 billion and \$20 billion (Hansen, 2014; IUCN, 2011; Wyler and Sheikh, 2008). By including the illegal fish market, the annual profits estimation rises between US \$15 billion to \$43,5 billion (Agnew et al., 2009). Even if these estimates are likely lower than the real numbers, considering much of the illegal trading is not detected by authorities (Cao Ngoc and Wyatt, 2013), wildlife trafficking is still the second largest illegal economy closely behind the illicit drug one (Warchol, 2004). More so, wildlife trafficking continues to grow, posing an ever-greater threat to the survival of many species and the ecosystems of which they are a part of. For example, elephants are now poached at a rate of three times higher than they were in 1998. Also, the poaching of rhinoceroses has increased from 13 individual victims in 2007 to 630 in 2012, leading to the extinction of two subspecies in 2011: the black rhinoceros and the Javan rhinoceros (Tachford, Allgood and Told, 2013). Rosen and Smith (2010) note that a "large number of illegal wildlife are traded successfully on a regular basis" (p.27).

In addition to the threat to the survival of species, wildlife trafficking also has significant consequences on humans. Indeed, wildlife rangers and protection officers face a considerable threat from poachers. Over the last 10 years, between 3,000 and 5,000 rangers have been killed by poachers, who are often heavily armed (Tachford, Allgood and Told, 2013). Trafficking also threatens the sustainable development of many countries, leading to the proliferation of firearms, undermining the security of citizens, and aggravating problems of corruption (Tachford, Allgood and Told,

2013). In addition, wildlife trafficking poses a threat to public health by circumventing sanitary controls designated for the trading of live and dead animals and, thus, creating a perfect environment for the spreading of zoonotic diseases. This situation is not without compromising the health of local populations, while also increasing the risks of international pandemics (Hickey, 2013).

There is, thus, no doubt that green criminology should look more closely to the issue of wildlife trafficking. More so, it needs to better understand how it is changing along with the growth of the Internet.

## Methodological approach

Academic databases (EBSCO and ProQuest) and search engines (Google Scholar, Mendeley and Oxford Bibliography: criminology) were used to find literature on virtual wildlife and drug trafficking. The Google search engine was also used to identify any other relevant gray literature regarding online wildlife trafficking, considering this issue has been little studied by academics so far. Several key works - such as "wildlife crim\*/traff\*"; "illegal wildlife trade"; "ivory trade"; "drug market/traff\*/trade"; "cryptomarket\*"; "marketplace"; "internet"; "web"; "darknet"; "darkweb"; "social media"; "facebook"; and "ebay" - were applied individually and concomitantly to find literature in both English and French. Once all of the articles found have been examined to only keep the relevant ones - according to their title, abstract and key words -, we proceeded through a content analysis of the literature. The objective was to highlight the informations needed to better understand the virtual markets of drug and wildlife in order to compare the two.

## Internet as an important tool for illegitimate activities

Since its democratization in the 1990s, the Internet has grown exponentially. Nowadays, this technology is used by nearly half of the world's population (The World Bank, 2016). Its success mainly rests on its ability to establish a global communication network, eliminating so conventional notions of distance (Pastor-Satorras and Vespignani, 2007). The Internet has revolutionized interpersonal communications, the distribution and accessibility of informations as well as legitimate economical activities (O'Neill, 2000). However, criminal activities have also benefited from it, adapting and moving towards a new form of crime

called “cybercrime”. Cybercrime could be defined as an illegal act accomplished or facilitated by the use of a networked computer (Wall, 2007), including offences such as hacking and fraud that already exist within the criminal justice system (Wall, 2007); drug and wildlife trafficking, when accomplished online, falls under this category. The use of the internet increases the efficiency of these traditional crimes, providing more opportunities for illegal activities. Considering offenders have now a global reach, they have access of an international potential of sellers and buyers for illicit goods and services (O’Neill, 2000). Cybercrimes also include new offences such as piracy (Martin, 2014). More so, there are many tools offenders can use to cover their tracks online, making it hard to trace them down. They provide anonymity and facilitate the commission of crimes (Martin, 2014). In other words, while the Internet allows to communicate and gather information faster, it also restricts potential detection by authorities and increases offenders’ profits by giving them access to an international market (O’Neill, 2000).

Finally, it is interesting to note that the Internet does not always facilitates the commission of crimes. For instance, it is suggested that traditional counterfeiting markets tend to move into the virtual world by taking advantage of online auction platforms such as eBay (Treadwell, 2011). However, online prostitution markets have removed sex workers between the ages of 30 and 40 due to the increase in the online demand for women of other age groups (Cunningham and Kendall, 2011).

Thus, the following two sections explore the use of the Internet for both drug and wildlife trafficking. We begin by examining how these illegal activities take place on virtual marketplaces through the Surface Web and, then, on the deeper web.

## Drug trafficking on the Internet

### *The Surface Web*

The Surface Web is the - small - portion of the Internet accessible with standard web search engines such as Google; and drug trafficking does occur on it, only less frequently than on the deeper web.

The production, trade and use of drugs considered as illicit are governed by the International Drug Control Convention, which includes substances such as opiates, cocaine, cannabis, amphetamines and other psychoactive substances (UNDOC, 2016). Counterfeit medicines and prescription drugs consumed for recreational purposes are also included, as they are unregulated synthetic psychoactive

substances (Ghodse, 2010). It is important to make the distinction between these different types of drugs considering that the illegal online markets could not be the same depending of the type. Pharmaceuticals, for example, are often sold through unaccredited online pharmacies that operate illegally (Scammell and Bo, 2016). The proportion of illegal pharmacies is substantial; in a study of 3160 online pharmacies, only 4 were accredited (Ghodse, 2010). These types of sites continue to expand, with a 70% increase between 2006 and 2007 (Ghodse, 2010). Half of medicines from non-accredited pharmacies have been found to be counterfeit, representing a market estimated at 78 billion euros in 2010 (Scammell and Bo, 2016). Even so, these online pharmacies appear to have an impact on consumption. Indeed, a 1% increase in admissions to centers for substance abuse is reported with every 10% recorded growth in high-speed internet usage due to drugs available online at these pharmacies (Goldman and Jena, 2011). These specific pharmaceutical markets proliferate as websites and exploit the loopholes in the legislations regarding these substances (Lavorgna, 2014a). In Europe, there is no uniform regulation for the online sale of medicine. Sites exploit this fact by locating their businesses in European countries where regulation is favorable for the commercialization of such substances, while sending them around the world (Scammell and Bo, 2016). Thus, the line between the legality and illegality of certain medicines and other synthetic drugs is often unclear, both for consumers and the authorities. These substances also tend to be less socially stigmatizing than drugs that are perceived to be harder such as heroin and cocaine (Lavorgna, 2014a). For the most part, illegal pharmacies do not attempt to hide their tracks, exposing themselves openly on the Internet (Lavorgna, 2014a). However, the prices for pharmaceuticals on these platforms are fairly high; they are often 400% to 860% more expensive than the prices of the legal pharmacies. Therefore, some suggest that the dark web could play an important role in drug sales as a cheaper and more reliable alternative for consumers and other dealers (Scammell and Bo, 2016).

Social medias have also been used as a platform for drug trafficking, although it does not provide the anonymity of crypto-markets in the exception of Facebook that has recently allowed access to the site from the dark web (Thanki and Frederick, 2016). Products are advertised on social platforms through the use of hashtags, and transactions follow mechanisms that differ from crypto-markets and online pharmacies. While exchanges may occur through social medias applications such as WhatsApp, the transactions often take place in a physical space

(Thanki and Frederick, 2016). Social medias may also provide both informations on where to get drugs and recommendations or instructions on how to access the dark web. Additionally, social medias may increase the demand for drugs by normalizing behaviors and attitudes related to drug use. For example, social media can be used to share photos and videos of positive drug-related experiences and, so, raises discussion on forums about how to use drugs or manufacture them (Thanki and Frederick, 2016).

### *The Deep Web*

The deeper web is the most important portion of the Internet. The Deep Web is the websites that can't be accessed with standard search engines, while the dark web is a small part of the deep web that is intentionally hidden and that can only be accessed through encryption. Access to the dark web is made possible with the use of protocol softwares such as Tor, providing so some anonymity for the navigation and communication (Martin, 2014). The sites on the dark Web that selling drugs (synthetic drugs, cannabis, heroin, etc.) are called crypto-markets, defined as "online forums on which goods and services are exchanged between users by concealing their identities through digital encryption" (Martin, 2014: 2). These crypto markets use encryption technologies regarding virtual currencies such as Bitcoin and enables transactions between the different players to be performed in anonymity without the involvement of external banking institutions (Martin, 2014). Traffickers appreciate these platforms because they provide low risk of being caught and offer an access to a larger clientele (Aldridge and Décary-Héту, 2016). While sellers can advertise their products, buyers can compare the quality of different products in regard to the seller's ratings (Martin, 2014). As a result, the crypto-markets redraw the dynamics between seller and buyer (Mounteney, Oteo and Griffiths, 2016) of the virtual platforms such as eBay. The fact that a quarter of the revenues generated on Silk Road, a crypto-market dedicated to illicit drug selling and now shut down, comes from wholesaling suggests that a good proportion of buyers become resellers on the online market. The crypto-markets would thus be like virtual brokers connecting sellers and retailers (Aldridge and Decary-Héту, 2016).

### *Conclusion*

Drug traffickers exploit different virtual platforms depending on the drugs and the risks involved. Drugs that are more socially tolerated and/or not forbidden

by law can be found on the Internet or social medias, while drugs less socially tolerated and/or forbidden by law are rather found on the dark web because of its providing of complete anonymity regarding both communications and transactions. Also, the organization of drug trafficking has evolved with the ability of actors to bypass certain intermediaries, making their purchases directly on-line from wholesalers. This organization is flexible and allows new players to enter the market as an extension, rather than a replacement, of the physical market. More so, the Internet allows to better manage drug production by adapting to demands within short timeframes; and the various virtual platforms extend the network of contacts between criminal peers for them to gain access to potential new customers. Considering that the competing traffickers' prices are known leads vendors to adapt and make promotional offers in order to attract new customers (Lavorgna, 2014a). Thus, while the Internet has forced vendors to employ marketing and customer loyalty strategies used in licit trades, the anonymity of the communications and transactions help them convince the potential buyers (Lavorgna, 2014a). Finally, the Internet allows drug traffickers to communicate faster with each other to put, notably, put in place countermeasures against any attempts made by the authorities to disrupt the online market (Lavorgna, 2014a, 2016).

### *Wildlife trafficking on the Internet*

#### *The Surface Web*

Wildlife traffickers, as drug traffickers, take advantage of the opportunities offered by the Internet. However, they use existing legitimate platforms such as auction sites, classified ads and discussion forums (e.g. Beardsley, 2007; Government of Australia, 2004; Hernandez-Castro and Roberts, 2015; IFAW, 2005, 2007, 2008, 2014a; INTERPOL, 2013; Yu and Jai, 2015). Most of the data on wildlife trafficking on the internet is limited to monitoring ads posted on sites within a defined period of time. This type of data does not provide a clear picture of the extent to which the Internet is used by traffickers, nor if this use is increasing. Nevertheless, it is clear that the internet is used to facilitate the illegal trade in wildlife. In 2005, the International Fund for Animal Welfare (IFAW) established the first portrait of the wildlife market on the Internet. IFAW (2005) reported almost 9,000 ads for animals and animal-derived products in only one week. While the investigation concerned the ads accessible from the UK, a good part of those ads was published on US-based websites. The majority of

the ads were for ivory, and the predominance of this specific product was also observed in their researches (IFAW, 2008, 2014a; Yu and Jai, 2015). Although, live animals were also advertised, as for examples a gorilla and a tiger respectively in sale for over \$9,000 and \$70,000. A more recent report of IFAW (2014a) found 33,006 classified ads within a six-week period, with an estimated total value closed to \$11 million; the report also showed a higher percentage of live animals for sale, accounting for nearly half of the advertisements. Fifty-six percent of these posts were from China (IFAW, 2014a). It also appears that a substantial number of unique players are involved in these virtual markets, with almost 67% of sellers attached to a single ad (IFAW 2008). It is interesting to note that not only IFAW works on shutting down illicit websites, but it also works in “partnership” with legal websites - such as eBay - to take down illegal wildlife trades (see IFAW, 2014b).

The main platform used by illegal sellers is the eBay auction site (IFAW, 2007, 2008). Despite the fact that eBay officially instituted a global ban against this crime (Sollund, 2016), it is still particularly popular for the trading of ivory products. It could be explained by the fact that regulations between eBay’s various national branches (eBay.com, .uk, .fr, etc.) are vague and inconsistent (IFAW, 2007). These flaws are exploited by traffickers in two ways. First, traffickers advertise their ivory products as “faux ivory” (Sollund, 2016) or as antique pieces, which allows them to avoid eBay’s ban (INTERPOL, 2013). Secondly, if a trafficker is banned, he or she can simply move to an eBay site in a country with less rigid policies towards these products (IFAW, 2007). It is also possible for a seller to repost previous advertisements that have been removed from the site. Thus, eBay’s intentions remain unclear considering that it protects the confidentiality of the sellers even after they have been requested to withdraw a particular ad (IFAW). The presence of illegal wildlife products on their sites may, in fact, represent a conflict of interest since the company profits from wildlife trades through the sales commission is affiliated with other companies used by traffickers such as Craigslist, Skype, Kijiji and PayPal (IFAW, 2008).

However, in recent years, traffickers mostly moved their activities to social medias. Before 2011, the majority of the online trafficking was distributed between small auction platforms and other forums as only less than 10% took place on social medias; in 2012, it was 18%. By 2015, social medias such as Facebook and Instagram accounted for almost 80% of the online wildlife trafficking (Bouhuys and Van Scherpenzeel, cited in Krishnasamy and Stoner, 2016). After having completed a 50-hours observation

on 14 Facebook groups, the organization TRAFFIC reports the extent of the phenomenon on these new platforms. It has identified 236 individual ads and more than 300 live animals sold, 93% of which were species protected by different governments or CITES (Krishnasamy and Stoner, 2016). In fact, a large number of players are involved in wildlife trafficking via social medias. The publications were posted by 106 different traffickers, while the total number of followers and active members of these groups was 68,000 users. The value of nearly the third of the products listed was generally between \$27,700 and \$43,100 (Krishnasamy and Stoner, 2016). Another report suggests that many products from tigers, such as canine teeth or skin fragments, are easily found on Facebook and deliverable by mail considering the small size of these items allows them to be sent unnoticed (Stoner, Krishnasamy, Wittmann, Delean and Cassey, 2016). Other researchers also mention that large quantities of ivory are sold in China through social medias (Hernandez-Castro and Roberts, 2015). As for drug trafficking, it seems that animal traffickers on Facebook complete their transactions using other digital medias such as WhatsApp or BlackBerry Messenger to reach a greater anonymity. Finally, a number of traffickers on Facebook offer international deliveries (Krishnasamy and Stoner, 2016).

The increasing popularity of social medias amongst traffickers can be explained by the many advantages they offer over more traditional sites such as eBay. Posting on social medias is free, and traffickers can control their accessibility. Most of the Facebook groups monitored were set to a “closed” privacy setting (Krishnasamy and Stoner 2016; Yu and Jai, 2015), requiring permission from a group administrator or an invitation from a group member in order to join (Facebook, 2016). This privacy feature is also found on Instagram accounts (Instagram, 2017). Traffickers can thus use social medias to advertise and select customers while enjoying a broad international audience (Krishnasamy and Stoner, 2016). Individuals can also repost group announcements to their personal pages if they want to reach a larger audience. Acting as an intermediary between traffickers and buyers, individuals can sell animals and products to the “clients” of their pages with a certain profit margin from the traffickers – a technique that allows traffickers to sell their “merchandise” more faster and through an extensive network (Yu and Jai, 2015).

### *The Deep Web*

It appears that there are very few, if any, wildlife traffickers on the Deep Web. Harrison, Roberts

and Hernandez-Castro (2016) examined 9,852 advertisements in virtual marketplaces listed on two main directories of the dark web. Within these ads, they searched for 121 keywords related to the illegal wildlife trade. They only found one positive result: a species of cactus - listed in Appendix II of CITES - that is used as a hallucinogen. Thus, even if unlisted specialist sites are a plausible means for trafficking wildlife, the authors conclude that there is little evidence to support the existence of a wildlife market on the dark web (Harrison, Roberts and Hernandez-Castro, 2016). More so, the drug trafficking community on the dark web appears to have little tolerance for wildlife traffickers, as the later are met with strong criticism when they attempt to sell animals-related products (Sullivan, 2016). Some researchers also explain the absence of illegal wildlife trading on the dark web with the fact that traffickers can act on the Internet (Harrison, Roberts and Hernandez-Castro, 2016), and thus have little need to conceal their activities especially considering that the dark web could restrict their audience. More so, some markets, including the sale of rhinoceros horns, are already well established in the physical world. These traffickers may also not have an interest in acquiring the technological skills required to move their markets to the dark web (Harrison, Roberts and Hernandez-Castro, 2016; Sullivan, 2016).

### Conclusion

Wildlife trafficking is present both on legitimate platforms and, particularly since 2011, on social medias; it appears, in fact, that traffickers do not see the need to sell on the dark web. However, the Internet has not had a perceptible effect on poaching itself, except perhaps in cases where poachers kidnap or kill wild animals to meet online demands (Lavorgna, 2014b). Nevertheless, traffickers obtain a certain advantage through the Internet. By providing anonymity and access to an international clientele, legitimate sites advertise the sale of endangered species without requesting authentication. Even in cases where permits are required, these permits are easily duplicated on the Internet and can be used for multiple sales (IFAW, 2008). Also, considering the internet is used to facilitate communications and network management through instant messaging services, it provides access to information concerning wildlife trafficking (geographical localization, care guidance, legal framework, tracking of shipments, etc.) as well as the opportunity to advertise to a larger audience. Finally, the internet makes it possible for traffickers to use intermediaries regarding the sell of

wildlife, allowing for a more unstructured organization as more players enter the market with fewer human resources (Lavorgna, 2014b).

### Similarities and overlaps between online wildlife and drug trafficking

The objective of this article was to examine the virtual markets of both drug and wildlife trafficking in order to determine whether or not they share similarities, as their physical ones do (see South and Wyatt, 2011). It seems, however, that these two types of trafficking diverge more than they converge when happening online. While drug trafficking is particularly well established on the dark web and also has sales platforms for prescription drugs on the Surface Web, wildlife trafficking is mostly absent from the former and rather operates through advertisements on the later via legitimate auction platforms. Nevertheless, the two markets do converge when it comes to the use of social medias. They both use social media as promotional tools for their "products", and favor alternative means of communication in order to finalize exchanges and transactions (Krishnasamy and Stoner, 2016; Thanki and Frederick, 2016). Also, wildlife traffickers exploit loopholes in a similar way to the illegal sale of pharmaceuticals. Indeed, while illegal pharmacies not only use the lack of consistent international legislations regulating online pharmacies but also the thin borderline between the legality and illegality of certain synthetic substances (Lavorgna, 2014a; Scammell and Bo, 2016), wildlife traffickers take advantage of the ambiguities regarding the regulations of platforms such as eBay to advertise where rules are the most flexible. Wildlife traffickers may also benefit from the absence of online national measures aiming to enforce the CITES regulations. In 2008, only the Czech Republic responded positively to the CITES request for member countries to implement satisfactory measures to combat online trafficking (INTERPOL, 2013). More so, wildlife traffickers take directly advantage of the CITES regulations. For example, under CITES, ivory may legally be sold as an antiquity. Traffickers can thus advertise their ivory products as antiquities in order to escape the filters of various virtual platforms (IFAW, 2007; INTERPOL, 2013).

The Internet also provides for both wildlife and drug traffickers the ability to promote their "products" on a larger scale and to access a broad international audience and instant communication with buyers. However, wildlife traffickers do not seem to have implemented marketing strategies in the contrary

of drug traffickers who offer discount schemes for drugs (Scammell and Bo, 2016). This difference is understandable, because the types of purchases are not the same. Customers buying drugs do so, mainly, to consume them, while customers buying wildlife products do so to collect them; therefore, purchases made by the later are generally more sporadic. The lack of marketing strategies in wildlife trafficking would still need further exploration because wildlife products could also be bought on a regular basis due to therapeutic beliefs or by some collectors addicted to internet auctions (Sollund, 2016).

More so, unlike many drug traffickers who pay attention regarding the protection of their anonymity, wildlife traffickers do not appear to share the same concern. If drug traffickers hide their identities when illegally selling drugs (Scammell and Bo, 2016) through encryption technologies (Martin, 2014), wildlife traffickers do not - necessarily - considering they use licit platforms (IFAW, 2005, 2007, 2008, 2014); and there is, in fact, little evidence to support the presence of the later on the Deep Web (Harrison, Roberts and Hernandez-Castro, 2016). The lack of concern of wildlife traffickers regarding anonymity could be linked to a loose enforcement of the laws by agencies (Sollund, 2013), but may also be a result of the failure enforce legislation on wildlife trafficking from various websites. Without having the same pressure as drug traffickers have, wildlife traffickers have little incentive to conceal their identities.

Finally, a possible overlap between the two virtual markets - as discussed for their physical one in regard to poaching and supply of drugs hidden in animals sold on the market (see South and Wyatt, 2011) - remains uncertain. It could be because of the Internet only being used at the moment of distribution, and not in the initial stages of trafficking (Lavorgna, 2014a, 2014b). It also could be because the Internet has not supplanted the physical market for wildlife trafficking but has, instead, extended it for new players to join. Thus, the activities of these virtual players would not cross paths with the ones involved in online drug trafficking. This specific hypothesis would implies a problematic in terms of species survival considering it only adds pressure on wild animals.

## Conclusion

Current knowledge relating to illegal wildlife trading on the Internet is still limited and relies mainly on the work of IFAW and TRAFFIC, two NGOs working to draw attention on wildlife trafficking. Also, it is important to note that the study of online wildlife

trafficking raises certain methodological issues; for examples, it is difficult for researchers to identify the specific species related to the products offered for sale and whether or not a product such as ivory is truly an antique – when this is essential knowledge for determining the legality or illegality of a sale. Finally, many of the terms associated with wildlife trafficking are polysemic, which can lead to false positives when monitoring websites; for instance, ivory, can refer to a color; but it has also been linked to drugs and pornography (Harrison, Roberts and Hernandez-Castro, 2016).

By building on a comparison with the virtual drug market, it may provide some indication of future transformations regarding the wildlife one; indeed, it is plausible for the wildlife market to move toward the dark web if more repressive policies are implemented and followed. Yu and Jai (2015) have shown that it is feasible to establish partnerships with site managers despite the possible conflicts of interest discussed above in the article. In such cases, the report of illegal advertisements to the managers was shown to reduce the number of such advertisements in the following months. However, it has not been possible to know if the decrease is due to the traffickers moving to other platforms; either way, this strategy does not reduce the demands for wildlife (Yu and Jai, 2015). A reduction of consumer demands would involve, in addition to introducing a more severe repressive policy, the education of the consumers as done in the area of illegal pharmacies (Scammell and Bo, 2016).

CITES regulations are also questionable regarding this area, and may be exploited by online wildlife traffickers in order to illegally sell live animals and animal products on legal platforms. To better fill the gaps within the current legislations, Haas and Ferreira (2015) suggest the implementation of a “federated database of criminal evidence items” (p.13), allowing different groups to share informations. However, it is interesting to note that the presence of online wildlife trafficking makes the market more visible, allowing trends to be monitored and to existing regulations to be adjusted as well. This was the case for the Australian government which, following an observation of the virtual sale of parts of large sharks, convinced the CITES of an existing pressure on the species (Government of Australia, 2004). CITES later classified the great white shark on the second appendix (CITES, n.d.).

In the light of the analysis of the literature, one solution would be a total prohibition of wildlife traffic, as suggested by Goyes and Sollund (2016). To date, CITES fails to regulate wildlife trafficking, sending even a contradictory and inconsistent message to both the

law enforcement authorities and the public - by, for instance, allowing the trading of the certain species while prohibiting the one of others in accordance with different criteria defined in the same regulations. Within the green criminological perspective, we could argue for equal rights to all animal species and, so, regardless of any socially constructed value given to them through anthropocentric frameworks - moving so toward a less speciest society.

The virtual trafficking in wildlife is an important and actual issue presenting a lot of challenges, yet it is still attracting little interest from researchers. The current regulations do not offer sufficient protection to wild species, vulnerable or not, and a complete prohibition of trafficking could help - but not without risking for the traffickers to move on the Deep Web as they did regarding drug trafficking. Within such a context, more research is needed on the matter of wildlife trafficking to better know and understand its real scale, its functioning and the actors involved. Researchers - see Coscia and Rios (2012) as an example - are already working on new tools and frameworks using computer science to help gather an important amount of qualitative data on a phenomenon; it could be an interesting option for empirical research on wildlife trafficking.

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