



Life+
SATEC



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ILLEGAL TRAFFICKING OF SNAKES AS EXOTIC PETS

Script Analysis

June, 2023



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1. Introduction

The illegal trafficking of wildlife is a billion-dollar industry with very negative impacts on biodiversity and habitats of species. Animals are trafficked and traded legally and illegally for multiple purposes: food, medicine, outfits, decorative objects, pets, etc.

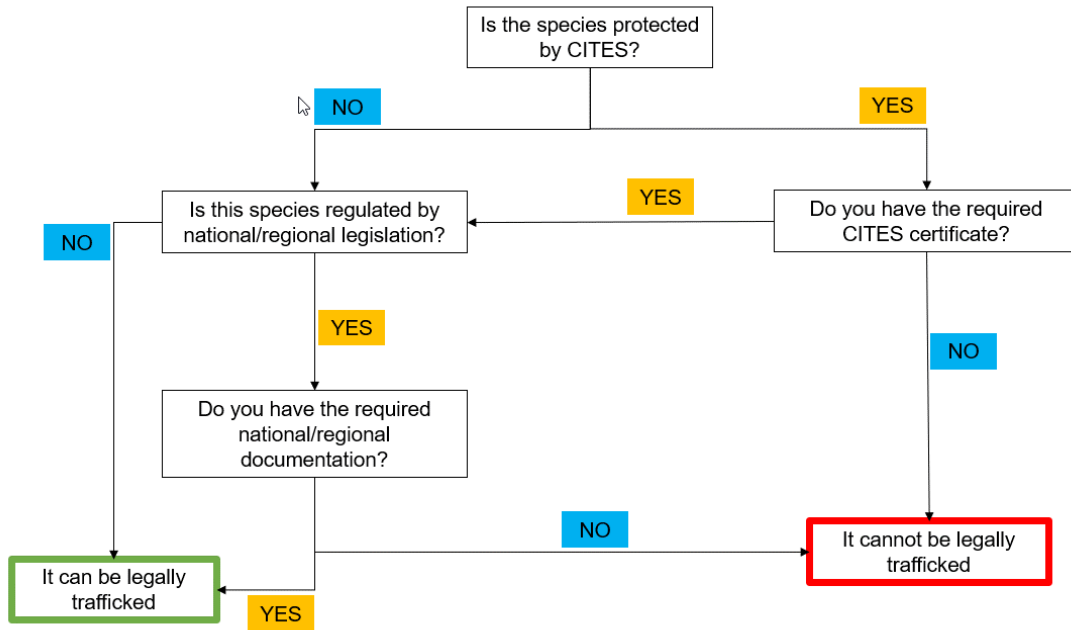
In the last decade the demand for exotic pets has increased (St. John, 2021,13) and it is common to find reptiles, birds and wild mammals that live with dogs and cats in European and American homes. Although the Convention on International Trade in Endangered Species of Wild Fauna and Flora (hereinafter CITES) regulates and protects their trade, many exotic pets are on the Red List of the International Union for Conservation of Nature (IUCN).

Snakes are very popular and coveted reptiles, especially those species that are rarer and from isolated geographical areas (Lyons & Natusch, 2011). The price that can be paid for certain specimens exceeds thousands of euros, thus encouraging their high collection, but also their extermination in the wild (Lyons & Natusch, 2013).

The existing literature on the subject states that both CITES and non-CITES snakes are illegally trafficked. Jensen et al. (2018, 11-12) identified the locations of exporters and importers in the United States, Europe and Africa, of both CITES and non-CITES snakes. Exporters were located in Africa, mainly in Togo, Tanzania and Egypt, and more dispersed in Cameroon, Sudan, Kenya, Republic of Congo, Democratic Republic of Congo and Guinea. Private sellers and importers were mainly located in North America, Germany, Czech Republic, Netherlands and France. To a lesser extent, they were also located in Slovenia, Portugal, Luxembourg, Sweden, Belgium, Switzerland and Spain.

In this line, Auliya et al. (2016) analyzed the global trade of reptiles as pets, their impacts and their contribution to the overexploitation of species and populations according to international law in various regions of the world. They confirmed that illegal trade activities involved CITES-protected species but also non-CITES species, as well as the important role Europe played as an illegal consumer and trader of non-CITES species banned at source but openly sold as pets in European countries.

This guide analyzes the international illegal trafficking of snakes as pets from their capture from the wild in the country of origin (exporter country) to their illegal possession in the country of destination (importer country). In this document, the term “illegal trafficking” refers to the export, sale and possession of species of snakes without authorization or valid certificate when they are protected by CITES or by national and / or regional regulations. To delimit what is legal or illegal in the international traffic of these animals it is necessary to know whether each species of snakes is protected in CITES, as well as the national and regional legislation that applies. The figure below provides a generic indication of whether, and under which circumstances, each species of snake can be legally trafficked.



Source: Own elaboration

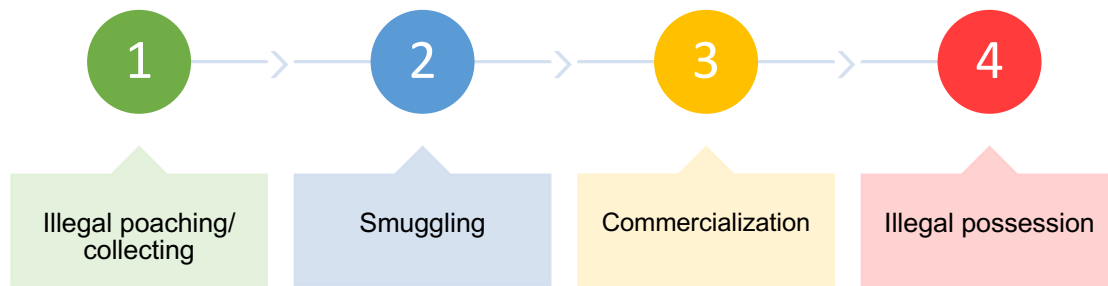
2. Snakes as exotic illicit pets: Script Analysis

In this document we used a methodological tool called script analysis. Schank & Abelson (1977) suggest that our procedural knowledge is similar in nature and form to a play script. In a theatrical script, the plots are divided into different acts and scenes in order to structure the narrative and make the general plot more understandable (Tompson & Chainey, 2011). In crime studies, the script technique was considered an extension of rational choice theory (Cornish and Clarke, 1987) and was introduced by Cornish in 1994 who borrowed the concept of "script" from cognitive psychology to: "(1) provide a framework for systematically investigate all stages of the crime commission process for a specific crime, the decisions and actions that must be taken at each stage, and the resources required to successfully complete the crime, and (2) help investigators identify points of intervention additional for situational prevention". In this sense, a sequence of acts and crime scenes simply represents all the actions taken before, during and after the commission of a particular crime, allowing the identification of legal and situational variables that will influence the action (Tompson & Chainey, 2021).

Consequently, this method is very useful to identify in a detailed and sequential way the motivation of the criminal, the criminal opportunities (facilitators and risks), the actors and activities carried out in each crime scene. Since Cornish coined the concept of script analysis in 1994, the technique has been used to understand a wide variety of crimes. Thanks to a systematic review carried out on the matter by Dehghanniri & Borrión in 2019, we know that its use has not stopped growing from 1994 to 2008. It is used to analyze cybercrime, corruption and fraud crimes, robbery and theft crimes, drugs, environmental crimes, homicides and murders, sexual assaults, among others.

In this guide we follow the crime script methodology to divide the illicit trafficking of live snakes to be sold as pets into four main steps: 1) illegal poaching/collecting, 2) smuggling, 3) commercialization, and 4) illegal possession. For each step, we offer an overview, one or more potential scenes (which include an analysis of relevant actors and

activities, as well as intervention strategies), and indicators of the illegal activity being studied.



3. STEPS

STEP 1: Illegal poaching/collecting

Overview

- Most traded pet snakes, both legal and illegal, are collected from the wild (Lyons & Natusch, 2011, 2013; Jensen et al., 2018; Masroor et al., 2020).
- The most exported non-venomous live specimens wild-sourced belong to Pythonidae.
- Ghana, Benin, and Togo are their largest exporters, especially of the Ball pythons (*Python regius*) as exotic pet (Cruze et al., 2020).
- Traded venomous snakes are mainly wild-sourced, come from Indonesia (77.5%) and belong mostly to the Elapidae snake family (97.5%).
- Snakes can also be captive-bred for later export although many of them come from the wild (in places like farms or other establishments).
- Poachers, middlemen and traders are the main actors involved in illegal trade wildlife.
- In many exporter countries there is a trade for local sale or export of wild or captive bred animals.
- Much illegal snake trade seems to take place in developing countries (Roe et al., 2002).
 - In contexts of poverty, such as in Central America, people take risks for little benefit due to their poor economic conditions (Auliya, 2016, 113).
 - In many of these countries there are established smuggling routes due to drug trafficking, an opportunity that is used for also trafficking illegal pets.
- Snake traders or poachers are aware that the rarest, endangered and protected snakes are the ones that will have the most value in the market, being a priority poaching or breeding target. (Auliya, 2016, 112).
 - The green python (*Morelia viridis*), tree vipers (*Bothriechis* spp), black-necked spitting cobra (*Naja nigricollis*), and painted carpet viper (*Echis coloratus*) are highly sought after in the illegal pet market (St. John, 2021, 13-18; Auliya, 2016, 113).
 - In a snake farm, the breeding of the most lucrative snakes can be emphasized to quickly and massively obtain specimens that can be trafficked on demand, with a stock of different species according to their sex and age, size, colour pattern, etc.

Scene 1: Wild-sourced snakes

The poachers are locals with knowledge of the environment and of snakes, with physical and technical skills capacity for handling and restraining snakes. Generally, they are harvesters for subsistence or opportunity reasons (Phelps et al., 2016). For example, a poacher can distinguish the colour, size and shape of the eggs of a certain species, the approximate number of eggs that it usually deposits, etc. It also knows if the snake lives in trees, caves or remains buried, if it kills with venom and/or constriction, etc. The snake poacher prepares the tools for hunting and chooses the right time and place. When it comes to trapping live reptiles, poachers need to make sure that they do not harm the animal in any way that would make them unable to survive. If a hatchling or adult snake is hunted (track 1), a hook or herpetological forceps will be required to extract and handle the snake, as well as containers for its subsequent storage and transport (buckets, carriers, boxes and the like). Such tools reduce handling accidents, especially when dealing with venomous snakes. The snake and/or its eggs can be hunted directly, or by leaving traps (see images 1 and 2). The traps attract more attention from the forest guards, although it reduces the exposure time of the offender on the scene, since they only come to install and collect them. In addition, they facilitate the capture, especially those more dangerous snakes or be more difficult to catch (Masroor et al., 2020).



Image 1. Boards of plywood snake trap¹



Image 2. Funnel snake trap²

For reptile species that lay eggs, collection of egg clutches is popular, especially when it comes to more dangerous reptiles such as venomous snakes (Masroor et al., 2020). To collect eggs (track 2), it will require the hunter to have enough knowledge to distinguish between them and, in some cases, to escape the mother. Most snakes are oviparous. This means that they lay eggs that take from days to months to hatch, abandoning the eggs after laying. However, some species of oviparous snakes remain next to the nest guarding it until hatching (for example, the King cobra). The viviparous gestate the hatchling inside the maternal womb until delivery and exercise greater parental surveillance (for example, the boa constrictor). On the other hand, the oviparous (most sea snakes, rattlesnakes, etc.) are gestated in an egg inside the mother that is expelled when it is fully gestated. As can be seen, the modalities of reproduction condition the

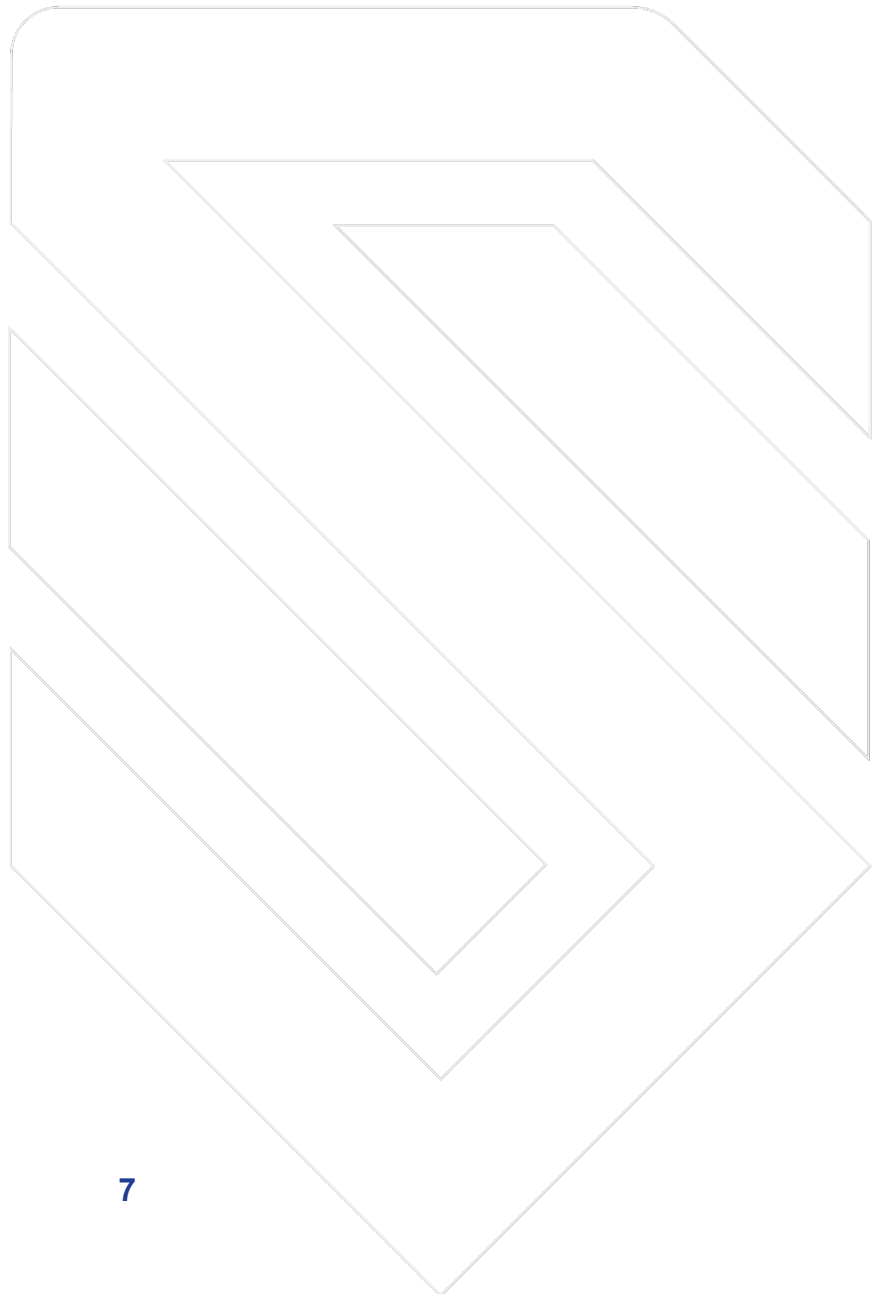
¹ Source: National Park Service. <https://www.nps.gov/samo/blogs/plywood-and-carpeting-crime-scene-clues-in-nature.htm>

² Source: Nuisance Management. <https://www.nuisancemanagement.com/snakes/>

hunting action and its risks, but also the illegal post-activity if the collected eggs need to be hatched later.

At the time of hunting, the greatest risk (real and perceived) of being caught occurs, since it can be detected red-handed by police officers or the natural environment agents, as well as by neighbors or locals. The risk of being caught is usually low due to the difficult control and surveillance of these activities (citation). Informal control may be weakened by complicity with these actions due to: the dependence of the area's economy on illegal trafficking, a culture whose customs (food, religious, etc.) are based on hunting snakes and low social awareness of the negative impacts of illegal trafficking.

As for the subsequent activity, once the snakes are captured, the place is abandoned without raising suspicions. The poacher can keep the snakes until they are delivered directly to the trader, who is a specialist commercial or vendor (track 1), or deliver them to a logistician intermediary that store animals until they are delivered to the specialist commercial or vendor (track 2). In both cases it will be necessary to have a place unknown to the police and other key agents, which guarantees that the snakes do not escape and can be fed or hatched. The escaping of an animal would increase the offender arrest risk of if the authorities are notified. The delivery of the snakes to the middleman, specialist commercial or vendor would be the last activity of this scene.



Scene 1		Wild-sourced snakes	
Scene classification	Cast	Corresponding activities	Intervention
Preparation	Snake poacher.	The offender is aware of the business of exotic snakes and the income generated by their sale in the international market. The trader is aware that people living in rural areas need income and identifies a business opportunity.	<ul style="list-style-type: none"> → Education for citizenship. → Inform citizens about the sanctions and/or punitive measures associated with these behaviors. → Helping people within these areas and give them reason to protect these animals rather than hunt them. → In this sense, a good measure would be to offer economic rewards, if they are paid so as not to lose their effectiveness (St. John, 2021, 21-24).
Pre-activity	Snake poacher.	Snake poacher prepares the tools for hunting and chooses the right time and place.	
Activity	Snake poacher.	Snakes are poached. Track 1: Adult or hatchling snakes Track 2: Snake eggs	<ul style="list-style-type: none"> → Local law enforcement should patrol and/or set up cameras in high-risk areas. → Patrols should focus on catching poachers in the act, finding and dismantling any traps that have been set and releasing any reptiles that may have been caught, and carefully. → Monitoring any known nesting sites. → Local law enforcement should respond promptly when called about any problems related to the pet trade, in case there may be a connection to the illegality. → Better coordination and communication between public and private agents that enforce the law.
Post-activity	Snake poacher, logistician intermediary, snake trader (specialist commercial or vendor).	Track 1: The poacher stores the snake until it is delivered to the snake trader. Track 2: The poacher delivers the snake directly to a middleman who stores it and later delivers it to the snake specialist commercial or vendor.	<ul style="list-style-type: none"> → Better coordination and communication between public and private agents that enforce the law.

Scene 2: Snakes obtained from illegal captive breeding

Before starting the illegal activity (pre-activity), adult snakes of reproductive age are needed, as well as their eggs, which generally come from poaching (scene 1). It will also be needed a place or house equipped with: terrariums and containers, light, an air conditioning system capable of maintaining an adequate temperature day and night, enough food (generally rodents, insects, birds, fish, eggs, frogs, lizards, etc.), personnel with knowledge in care, breeding, manipulation and restriction of snakes and materials necessary for this purpose. In illegal activity, all of the above activities are essential, as well as a constant cleaning to guarantee the "product" quality. Depending on the size of the hatchery, more or less resources will be needed. The more actors are involved in the activity, the greater the coordination and reciprocity between them and the risk of being caught. Unlike scene 1, this scene presents more perceived (and real) risk of being arrested since the illegal activity is carried out in a continuous and localized way. The need for attention and care that an animal farm requires greatly conditions the routine activities of its actors. This generates constant exposure in certain places, which can raise suspicions. Likewise, the actors can potentially be charged with a greater diversity of crimes apart from the illegal possession and trafficking of animals. They can be accused of exploitation, animal abuse, crimes against the rights of workers and documentary falsification. The agency responsible for controlling these activities will be the police of each country and their specialized environmental sections through inspections of suspicious places. They can also act at the request of neighbors who notice the illegal activity and choose to report it. In this case, informal control can act more effectively against crime if the neighbors perceive the hatchery as unsafe for coexistence or their own lives.

Regarding post-criminal activity, it can be identified with the sale of the animal to the end customer, although the criminal activity would continue as long as the hatchery remains operative.

Scene 2 Snakes obtained from illegal captive breeding			
Scene classification	Cast	Corresponding activities	Intervention
Preparation	Snake trader (specialist commercial or vendor).	<p>The offender is aware of the business of exotic snakes and the income generated by their sale in the international market.</p> <p>The offender is aware that with the captive breeding of certain snakes he can obtain many specimens and identifies a business opportunity.</p>	<p>→ Education for citizenship.</p> <p>→ Inform citizens about the sanctions and/or punitive measures associated with these behaviors.</p> <p>→ Helping people within these areas and give them reason to protect these animals rather than hunt them.</p> <p>→ In this sense, a good measure would be to offer economic rewards, if they are paid so as not to lose their effectiveness (St. John, 2021, 21-24).</p>
Pre-activity	Snake trader (specialist commercial or vendor), snake poacher and snake launderer.	The offender locates a suitable place and the material and human resources necessary to breed the snakes.	
Activity	Employees (are specialist commercial).	Snakes are bred.	<p>→ Monitor and regulate captive breeding facilities more effectively:</p> <ul style="list-style-type: none"> → Regular inspections to make sure breeding is occurring, → To check in on numbers of reproductive individuals and those that come from nature. <p>→ Fine facilities for any issues and shut them down if the issues persist.</p> <p>→ Local law enforcement should respond promptly when called about any problems related to the pet trade, in case there may be a connection to the illegality.</p> <p>→ Better coordination and communication between public and private agents that enforce the law.</p>
Post-activity	Snake vendor, snake launderer and customer.	The vendor sells the snake to the final customer.	→ Better coordination and communication between public and private agents that enforce the law.

Scene 3: Snake laundering through legal farms

Snake bred on farms can alleviate the exploitation of biodiversity as a result of poaching. Some countries have legally provided for the sale of pets to be limited to captive breeding, although some studies indicate that the farms contribute to the illegal wildlife trade. Lyons & Natusch (2011) and Nijman & Shepherd (2009) showed that wild specimens can be laundered on farms as if bred in captivity. Nijman & Shepherd (2009) observed that there was a gap between the number of snakes exported as pets annually from Indonesia and the number of specimens bred on farms. Lyons & Natusch corroborated that a high percentage of green pythons captured in the wild were destined for breeding farms. They also showed that the business of snake farms was not as profitable as capturing in the wild due to production costs and the maturation and reproduction times of snakes. All this encouraged illegal capture.

One of the main advantages of farms is the lack of inspections and ease of issuing CITES certificates when dealing with snakes in captivity. Therefore, farms are an opportunity for laundering wild specimens as captives. However, as a disadvantage, wild specimens had a higher death rate in transport and became more ill than those bred in captivity.

The pre-activity of this scene is like scene 1 (capturing the animal from the wild). Once the snake has arrived at the farm (activity), either at the hands of its poacher or intermediary, it is fed and cared for along with the rest of the specimens. To prepare for its legal sale, a false certificate is issued indicating that the snake was bred in captivity. In this way the snake can already be sold and exported legally. The truth is that it is difficult to differentiate between a snake captured from the wild and one bred in captivity, although the following indicators may be useful.

<p>Wild-sourced snake identification indicators</p> <p>(Lyons & Natusch, CITES Report).</p>	<ul style="list-style-type: none"> ▪ Passivity ▪ Rejection of food ▪ Unusual lethargy ▪ Extreme thinness ▪ Presence of gastrointestinal parasites ▪ Presence of ticks ▪ Lesions on gums and lips. ▪ Presence of marks, wounds, scars, etc.
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Regarding the intervention measures in illegal activity (see table below), it is worth mentioning the testing of origin of snakes. Lyons & Natusch (2011, 3078-3079) propose that breeding farms be required to keep the eggshells of reptiles that are bred and exported as proof of provenance. A given egg corresponds to a single snake. The eggshells of different snake families are easy to distinguish, however, the differences between different specimens of the same family are more subtle, but also distinguishable. With this intervention measure, the egg is linked to the specimen, although this requires a classification of the shape, weight and size of each egg according to species to avoid fraud. For example, a guide could be provided to the police who check the animals and their certificates to check whether the eggshell does indeed correspond to the same species.

Scene 3		Snake farms	
Scene classification	Cast	Corresponding activities	Intervention
Preparation	Snake trader (specialist commercial or vendor).	<p>The offender is aware of the business of exotic snakes and the income generated by their sale in the international market.</p> <p>The offender is aware that with the captive breeding of certain snakes he can obtain many specimens and identifies a business opportunity.</p> <p>The aggressor is aware that capturing the wild environment is more economical.</p> <p>The aggressor is aware that the sale of animals from farms is legal and offers a business opportunity to launder snakes of illegal origin.</p> <p>As a disadvantage, snakes captured from the wild died more than those bred in captivity.</p>	<p>→ Education for citizenship.</p> <p>→ Inform citizens about the sanctions and/or punitive measures associated with these behaviors.</p> <p>→ Helping people within these areas and give them reason to protect these animals rather than hunt them.</p> <p>→ In this sense, a good measure would be to offer economic rewards, if they are paid so as not to lose their effectiveness (St. John, 2021, 21-24).</p>
Pre-activity	Snake trader (specialist commercial or vendor), snake poacher and snake launderer.	<p>See Scene 1.</p> <p>Have adequate facilities for breeding snakes.</p>	<p>→ See Scene 1.</p> <p>→ Create a record of snake farms.</p> <p>→ Give incentives to farm owners not to traffic in wild specimens.</p>
Activity	Employees (are specialist commercial).	<p>Snakes are bred in the farm.</p> <p>Falsity of the CITES certificate.</p>	<p>→ Monitor and regulate captive breeding facilities more effectively:</p> <ul style="list-style-type: none"> → Regular inspections to make sure breeding is occurring, → To check in on numbers of reproductive individuals and those that come from nature. → Proving provenance. <p>→ Fine facilities for any issues and shut them down if the issues persist.</p>
Post-activity	Snake vendor, snake launderer and customer.	The vendor sells the snake to the final customer.	→ Better coordination and communication between public and private agents that enforce the law.

Indicators of illegal poaching

- Decrease in the population of certain species of snakes.
- Decrease of biodiversity in the area.
- Presence of poachers in habitat areas of snakes.
- Presence of snake traps.
- Presence of illegal animal markets in the area (physical and virtual).
- Local culture of using exotic animals for various products (medicine, drink, food, clothing, etc.).
- Notices to the competent authorities (police and forestry agents).
- Emergency alerts (firefighters) due to the presence of exotic animals (due to escape or noise and/or odors from other animals that live with snakes).
- Alerts to the animal poison control center.
- Notifications to emergencies for snake bites.
- Hospital admissions for snake bites.
- Deaths caused by snake bites.

STEP 2: Smuggling

Overview

- Wildlife smugglers use land, air and sea transport networks to move goods and live animals using legal and illegal carriers.
- Snakes do not require large spaces to be transported and are generally transported in small quantities.
- Live animals are usually transported by air, express couriers, local boats, and vehicles by land (Zavagli, 2021, 11).
- Air transport can be more effective due to the fact usual traffic routes involve long distances; thus, reducing transport time – which in turn increases the survival rate. However, this does not exclude the use of land transport, especially if the trade occurs between neighboring countries, and by ship (IMO, 2022, 9). In contrast, it is rare for live snakes to be smuggled by sea in shipping containers (IMO, 2022, 5).
- Traffickers must hide the animal or falsify its documentation to make it look like legal traffic.

In this step of the script, we analyze methods in the transport of the animal once collected, either from the wild or from captive breeding. For this, three key scenes are analyzed: air, sea, and land transportation.

Scene 1: Air transport

The plane is the fastest way for international transport, and it is usually used by smugglers to ship a variety of goods (drugs, weapons, money, food and even people), and also live animals (ROUTES³, 2021). Snakes, or their eggs, can be hidden in the

³ The ROUTES Partnership brought together transport and logistics companies, government agencies, development groups, law enforcement agencies, conservation organisations,

passenger's body or personal belongings, in the checked suitcase, or on air cargo. Reptiles and other marine species, unlike other species such as birds, have a greater capacity to endure being held in small spaces for longer, hence they are usually sent by air cargo (ROUTES, 2021). These advantages are known by traffickers, who will try to transport as many specimens as possible without being discovered. However, offenders will be aware of the controls that exist at airports, which increases the effort and cost to carry out the action. In this sense, those airports with weaker controls, either due to the lack of animal detection tools (scanners and other devices), surveillance personnel (in number and adequate training), or to the practices of permissiveness or corruption, they will be more vulnerable.

The main actors in this scene are: a buyer or middleman who travels to the exporter country to buy the animal and come back; a professional trafficker or middleman from the exporting country who travels to deliver the merchandise to the final customer or to another middlemen. In the latter case, the order (purchase) is usually made via the internet (see step 3).

Criminal pre-activity begins before the trip. For example, visiting the airport to learn about its facilities, security measures and policy (level of permissiveness or corruption). Some situational prevention measures at this point may be: use publicity (posters, informative pamphlets, etc.) that inform about the presence (and consequences) of illegal traffic, sanctions, and possible rewards for those who report it. These measures can incentivize and sensitize travelers and deter smugglers.

The offender may travel with false identifying documentation if he or she already has a police record. The offender could also prepare the false documentation of the animal in case of declaring it, as well as a credible reason to travel. Similarly, this documentation can be sold (along with the animal in question) to the buyer who travels to another country to acquire a pet for himself without being a professional trafficker. In the event that middlemen or mules are used, those without arrests and with less suspicious physical appearance will be chosen.

Once at the airport (activity), the offender can declare or hide the snake. In the case of declaring the snake, using *false documentation*, the offenders would usually do so in an authorized carrier⁴ and the specimen would travel in the hold of the aircraft⁵. In these scenarios, traffickers use different methods to alter certificates (track 1). Misuse of CITES permits and certificates affects many species and can occur throughout the trade chain. Here are some common examples: intentional declaration of false information on documents (regarding species, quantity, source, value); documents modified after issue; counterfeit documents; re-using or photocopying documents; expired documents, and stolen documents (Zavagli, 2021, 17). Declaring the snake only makes sense if the particular species is allowed in the importing country.

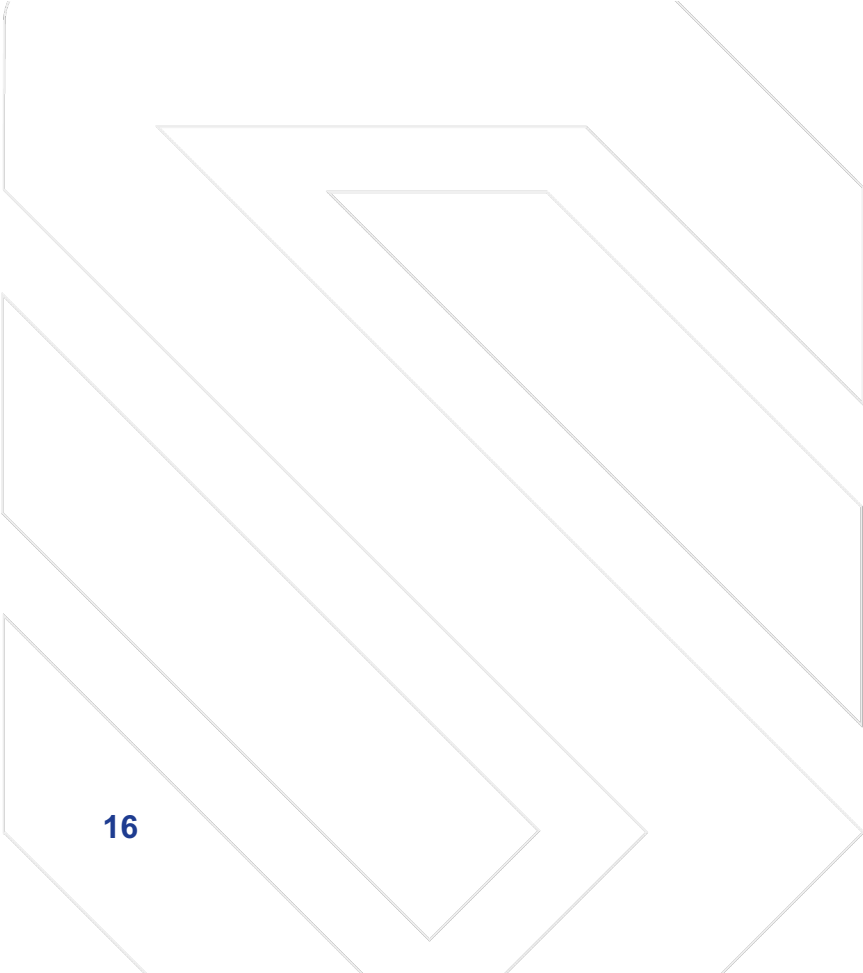
academia and donors. The aim was to jointly develop ways to disrupt the illegal wildlife trade by reducing the use of legal transport supply chains. See: <https://routespartnership.org>

⁴ Follow IATA's Live Animals Regulations (LAR), the global standard to ensure all animals are transported safely and humanely by air.

⁵ In-cabin travel is not allowed to cause for reasons of order and safety during the trip.

Scene 1		Air transport	
Scene classification	Cast	Corresponding activities	Interventions
Preparation	Buyer, middleman or trafficker.	The actor is aware of: + The plane is a way of rapid transport that guarantees a higher animal survival. + Some airports have weak controls. + Some airports engage in corrupt practices. + There are low-income people willing to act as mules who assume all the risks of being captured. + Air cargo reduces the chances of being captured by not traveling with the animal. - Part of the merchandise may die during the trip (losses). - Severe penalties if arrested.	→ Education for citizenship. → Inform citizens about the sanctions and/or punitive measures associated with these behaviors. → Greater coordination between key actors. → Implement internal accountability measures implemented by external mechanisms.
Pre-activity	Buyer, middleman or trafficker.	Know the security measures (previous visit to the airport). Preparation of the equipment to transport the animals. Hiring middleman. Preparation of false documentation in the case of declaring the snake. Credible reason to travel.	→ Public address notices, posters, signs, etc., at the airport itself that inform passengers about the prevalence and consequences of illegal traffic, and the sanctions imposed. → Offer rewards.
Activity	Buyer, middleman or trafficker.	Snakes are transported. Track 1: Snakes in suitable carriers with false documentation traveling in the hold. Track 2: Snakes hidden in the traveler's body (or clothing). Track 3: Snakes hidden in the traveler's carry-on luggage. Track 4: Snakes hidden in the checked suitcase. Track 5: Snakes hidden in the cargo of the plane.	→ Quick awareness courses for airport staff. → Staff trained in identifying animals. → Failing that, a quick and effective coordination with snake experts. → Train staff to learn to recognize suspicious behavior in passengers. → Train staff to learn to recognize the contours of the inside of packages. → Demand the shell of the eggs of snakes that were supposedly bred in captivity and declared. → Personnel trained in detecting false documentation. → Establish a protocol for employees to report wildlife trafficking (ROUTES). → Adopt an illegal wildlife-free corporate policy as part of a Code of Conduct (ROUTES). → Internal accountability system with external bodies.

			<ul style="list-style-type: none"> → Share information on high-risk routes and methods of transport between transport companies (aircargo). → Coordination of the latter with customs and police officers. → Notification by courier companies of suspicious shipments. → Use of full-body scanners, suitcases and packages. → Random baggage inspection. → Trained dogs. → CCTV. → CCTV.
Post-activity	Buyer, intermediary or trafficker.	The actor leaves the airport once he collects his checked suitcase. In case of operating with middleman (mule), delivery of the goods in a certain place.	→ CCTV.



Scene 2: Maritime transport

Maritime transport is a method widely used by smugglers to traffic wild animals, mostly dead or in parts, and in large quantities. It is used to a lesser extent for live animals. Marine supply chains are extremely complex and disrupting traffic networks is a major challenge. Recently, the International Maritime Organization (IMO) has developed guidelines for the prevention and suppression of the smuggling of wildlife on ships engaged in international maritime traffic to complement international documents and recommendations issued by various bodies⁶. To this end, the guidelines set out basic procedures for detecting, investigating and prosecuting illegal wildlife smuggling by sea. In addition, Zavagli's report to World Wildlife Fund (WWF) and Traffic (2021) is a very useful document to capture the most common red flags indicators for illegal wildlife trade (IWT) happening through containerized sea cargo (common modus operandi, smuggling, routes and typologies). Both documents will be used in this script by selecting four key scenarios (IMO, 2022, 5): Passenger cruise ship, ferry, roll-on/roll-off ("ro-ro") vessels and container cargo.

A. Passenger cruise ship

Cruise trips can be used by tourists to buy pets in local shops and flea markets. Tourists may acquire the animals as a souvenir. Cruise stopovers in localities whose fauna is exotic are more vulnerable places for this practice. Again, reptiles are potential targets for this practice as they are easy to hide and transport without raising too much suspicion. Here we can distinguish the opportunistic tourist -who did not plan the eventual acquisition of the animal but who, once traveling, decides to do so when the opportunity arises- from the tourist who, to a greater extent, had planned to purchase some exotic animal. The latter requires greater planning and criminal pre-activity: knowing in advance at what stops of the markets are located, hiring excursions in potential places and carrying belongings for the concealment and care of the animal.

The traveler usually takes small specimens (or their young or eggs) to facilitate their concealment in the body and / or hand luggage. When tourists return to the ship, baggage checks by port personnel (first check) and cruise ship staff (second check) are key in detection. Depending on the means of control that the port and the ship itself have (scanners, dogs and specialized personnel), as well as the control policy regarding tourists in the stopovers (more or less permissive) will mean a greater effort for the tourist. Generally, ports have scanners for hand luggage, as well as cruise ships themselves, which implies having to pass two controls. Although, the presence of full-body scanners, essential to identify animals in the traveler's body, are not present in all ports.

A control practice used on cruises the night before disembarkation is to collect passengers' bags leaving them with only the most valuable documentation and

⁶ For instance: The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Secretariat, the World Customs Organization, the United Nations and the International Tropical Timber Organization.

belongings in hand luggage. The suitcases are inspected and scanned in the premises of the ports and then returned to their owners at the end of the trip. Again, the tourist's travel bag and clothes are essential to hide the animal. As can be seen, the existing controls on cruise ships, both by the port police and customs agents, as well as by cruise ship personnel is high. If we add the fact that cruise ships involve a significant economic outlay and that their users do not have as a priority objective to traffic in exotic animals, it does not seem one of the most common and vulnerable scenarios.

B. Ferry

The ferry is a boat that transports people and vehicles between two maritime points, mostly over short distances. Live animals can be attached to the person's body, in their personal belongings, in the travel suitcase and inside the vehicle. Unlike cruise ships, these are not tourists who occasionally buy exotic pets, but buyers, middleman and professional traffickers who travel from one country to another because they have identified that it is a safe way not to be intercepted (see pre-activity, scene 1). Crew members can join the criminal action by hiding the animals as part of their personal property. For example, hiding the animals in their belongings of the cabin.

In this scene we apply what was mentioned for airports and cruise ships (tracks 1, 2, 3 and 4). However, the fact of being able to transport a vehicle modifies the structure of opportunity and allows the trafficker to introduce a greater number of animals. The cars are used as mules to introduce animals ("mule cars"). In order to introduce the car on the boat it is required that it has the documentation in order, including valid insurance. Generally, cars are inspected randomly before boarding, occasionally using dogs trained to locate drugs, explosives, and people. Mule cars are characterized because the interior of the vehicles has been altered to set up spaces that are difficult to find and allow hiding the merchandise, just as drug traffickers do. For this, car mechanics or people with specific knowledge may be used to manipulate the interior cavities (pre-activity). It is unusual for scanners to be used, or for all vehicles to be inspected, given the flow of travelers and the delays this would imply. It is, therefore, a means that provides a greater criminal opportunity for traffickers.

C. Roll-on/roll-off ("ro-ro) vessels

Ro-Ro is an acronym for Roll-on/roll-off. Roll-on/roll-off ships are ships that are used to transport wheeled cargo and travel longer distances than ferries without carrying passengers on board. The ship's vehicles are loaded and unloaded via integrated ramps. In this scene the main element of concealment is the vehicle. Everything mentioned for the previous scene applies without considering the provisions for passenger transport. Unlike the pre-activity of scene 1, it is likely that there are no buyers (only traffickers and middlemen) performing this action due to the greater distance and need to own a car in the country of origin.

D. Container cargo

Cargo containers can be used for the transport of international parcel shipments (express couriers) as is the case with air cargo. The shipment of complete containers usually contains dead animals, or their parts camouflaged with other goods but not live animals (Zavagi, 2021). For the purpose of our research, we are interested in international shipments of packages that may contain live animals and that are camouflaged among thousands of packages. See track 5 of scene 1.



Scene 2		Boat transport			
Scene classification	Corresponding activities				Intervention
	Preparation	Pre-activity	Activity	Post-activity	
A. Passenger cruise ship	<p>The offender is aware of the opportunity to visit places of sale of animals.</p> <p>Cast: intentional tourist.</p>	<p>Planned stopovers in key locations.</p> <p>Information on location of locals or street markets.</p> <p>Suitable equipment.</p> <p>Acquisition of the animal in locals or street markets.</p> <p>Cast: Intentional tourist.</p>	<p>Concealment in body or hand luggage (see scene 1, tracks 2 and 3). Concealment in cabin until landing.</p> <p>Cast: opportunistic and intentional tourist.</p>	<p>Landing.</p> <p>Cast: opportunistic and intentional tourist</p>	<ul style="list-style-type: none"> → Short training courses to raise awareness for ship personnel. → Staff trained in identifying animals. → Fast and effective coordination with snake experts. → Train staff to learn to recognize suspicious behavior in passengers. → Establish a protocol for employees to report wildlife trafficking (ROUTES). → Adopt an illegal wildlife-free corporate policy as part of a Code of Conduct (ROUTES). → Use of full-body scanners and carry-on luggage. → Random search of tourists. → Dogs trained to detect snakes.
B. Ferry	<p>The offender is aware of the opportunity to transport animals between nearby countries. It is aware of the least control in vehicle inspection.</p> <p>Cast: buyer, middleman, crew member and traficante.</p>	<p>Prepare the necessary documentation to travel (personal and vehicle).</p> <p>Prepare false documentation.</p> <p>Prepare belongings to hide snakes.</p> <p>Interior handling of the vehicle.</p> <p>Cast: buyer, middleman, crew member, trafficker, vehicle technician.</p>	<p>False documentation according to scene 1, track 1.</p> <p>Concealment according to scene 1 (tracks 2, 3 and 4).</p> <p>Concealment of snakes in the car.</p> <p>Cast: buyer, middleman, crew member and trafficker.</p>	<p>Landing.</p> <p>Cast: buyer, middleman, crew member and trafficker.</p>	<ul style="list-style-type: none"> → What is contemplated in scene 1. → What is contemplated in A. → Internal accountability system with external bodies. → The use of greater technology and security forces to inspect vehicles.

<p>C. Roll-on/roll-off ("ro-ro") vessels</p>	<p>The offender is aware of the least control in the inspection of vehicles.</p> <p>Cast: middleman, crew member and trafficker.</p>	<p>Prepare the necessary documentation to travel (personal and vehicle). Prepare belongings to hide snakes. Interior handling of the vehicle.</p> <p>Cast: middleman, crew member, trafficker, vehicle technician.</p>	<p>Concealment of snakes in the car.</p> <p>Cast: costumer, crew member, middleman and trafficker.</p>	<p>Landing.</p> <p>Cast: middleman, crew member, and trafficker.</p>	<ul style="list-style-type: none"> → Establish a protocol for employees to report wildlife trafficking (ROUTES). → Adopt an illegal wildlife-free corporate policy as part of a Code of Conduct (ROUTES). → Internal accountability system with external bodies. → The use of greater technology and security forces to inspect vehicles. → Dogs trained to detect snakes.
<p>D. Container cargo</p>	<p>The offender is aware that shipping by courier is fast, cheap and less exposure than traveling with the animal. Also that hiding the animal well increases the success of the operation. On the other hand, it assumes that part of the merchandise may die during the trip generating possible losses.</p> <p>Cast: middleman and trafficker.</p>	<p>Preparation of the equipment to transport the animals. Preparation of false documentation.</p> <p>Cast: middleman and trafficker.</p>	<p>Documentary falsity according to scene 1, track 1. Snakes hidden in the ship's cargo.</p> <p>Cast: middleman and trafficker.</p>	<p>Delivery of the shipment.</p> <p>Cast: buyer.</p>	<ul style="list-style-type: none"> → Train staff to recognize the shapes inside packages. → Establish a protocol for employees to report wildlife trafficking (ROUTES). → Adopt an illegal wildlife-free corporate policy as part of a Code of Conduct (ROUTES). → Internal accountability system with external bodies. → Personnel trained in detecting false documentation. → Use of merchandise scanners, especially 3D-ray. → Trained dogs. → Share information on high-risk routes and methods of transposing between transport companies. → Coordination of the latter with customs and police officers. → Notification by courier companies of suspicious shipments.

Scene 3: Road transport

Another means of illegal transport used mostly between neighboring and nearby countries is the use of vehicles. A private individual can acquire a snake in one country and transport it to another by car without raising suspicion if there are no border controls. This is the case in the European Union and the North American states. In other words, the opening of borders between non-distant countries favors this type of practice, as well as the permissiveness of certain national laws for the possession of exotic animals can favor the trade. There are two possible risks for the actors: controlled borders and the control of traffic on roads. If it is necessary to cross controlled borders, greater risks will be assumed, and the sanction will be perceived as more likely. To the previous inconveniences, we must add the expenses for the trip and the time invested.

Land transport of animals includes private vehicles driven by buyers, middlemen or traffickers, or trucks or vans used by transport companies that are used by them fraudulently. In this scene we will focus on vehicles used by individuals. For transport companies see the above for air and container cargo.

The trip can be done by the occasional buyer, that is, the person who occasionally travels to another country to pick up a snake that he has previously purchased online. To this end, the buyer needs to plan with the trafficker or middleman the location and time for the physical meeting in which the delivery will take place. Obviously, it is required to have a vehicle with documentation in order not to raise suspicions, as well as to be able to cover all the expenses caused by travel. The buyer should also prepare suitable equipment for transporting snakes. It is possible that the buyer has acquired the snakes with a false documentation knowingly, therefore, the provisions for documentary falsity in track 1 of scene 1 (pre-activity) would apply. If the buyer travels without documentation, he or she may hide the snake in the vehicle. Here, depending on whether one plans to find border controls, the interior of the vehicle can be modified (mule car). In those countries where there are no border controls, it will be easier to traffic the animal, this aspect being subject to the international agreements of each territory. In those countries that have border controls, the buyer must pass a control both to the idea and to the return (the moment of greatest risk). Depending on the country, the protocol and means of control at border posts may vary. However, it is usual to ask for personal documentation, the conditions of entry and exit, reason for the trip, place of residence, among others. Inspections of the vehicle and personal belongings can take place (randomly or because of suspicion), although they are not carried out to all vehicles so as not to hinder transit. This moment, together with the collection of the animal, especially if it is carried out by a habitual trafficker or investigated by the police, are the most at risk. The activity of illegal transport ends upon arrival at the place of origin, exposing oneself on the way to the usual traffic controls. It is unlikely that, in countries with open borders, with drivers with personal documentation and circulation in order, this type of behavior can be detected.

The professional trafficker is a more exposed actor and, therefore, presents more risk of being arrested. This is because they travel more frequently and, therefore, are more exposed to border and road controls. The level of professionalization may vary between different agents. There may be traffickers who act as small illegal businesses, that is, with warehouses or logistics premises and several vehicles, as well as actors working alone. We can also find small legal companies that engage in illegal trafficking clandestinely camouflaging the merchandise along with other products. Once the

merchandise is purchased (see step 1) and usually sold online (see step 3) it is distributed to the buyer or to a middleman that provides it to the buyer. Like the buyer (track 1), the actor knows which countries have border controls, which do not and, possibly, the protocol and level of control of which he needs to cross according to his priority routes. Unlike the buyer, here we are talking about greater cargo of merchandise, because it is possible that routes are optimized to make more pickups and/or deliveries, often with a reptile fair as the final destination. This also implies a greater benefit and incentive to perform the behaviors. If the merchandise is camouflaged with other legal ones, it is necessary to carry out an inspection of the stock to verify that, indeed, both the quantity and the type of product declared coincide. Again, as in track 1, there is a great criminal opportunity in this type of crime due to the large flow of people and vehicles.



Scene 3			
Overland vehicles			
Scene classification	Cast	Corresponding activities	Intervention
Preparation	Occasional buyer. Professional trafficker.	+ Countries with open borders. + Less likely to be discovered. + Shipping large quantities = more economic benefits. - Investment in vehicle, accommodation, warehouses and gasoline. - Greater investment of time. - Severe penalties if caught. - Traffic controls.	→ Education for citizenship. → Inform citizens about the sanctions and/or punitive measures associated with these behaviors. → Short training courses to raise awareness for customs and police officers. → Greater coordination between key actors. → Implement internal accountability measures implemented by external mechanisms. → Offer rewards. → Share information on high-risk routes and methods of transposing between transport companies. → Coordination of the latter with customs and police officers. → Notification by courier companies of suspicious shipments.
Pre-activity	Occasional buyer. Professional trafficker.	Track 1: Occasional buyer. <ul style="list-style-type: none"> ▪ Locate buyer through the internet. ▪ Plan with the latter the collection (day, time, place). ▪ Vehicle and documentation in order. ▪ Prepare snake appliances. Track 2: Professional trafficker. <ul style="list-style-type: none"> ▪ Purchase the merchandise ▪ Locate customers online. ▪ Vehicles (vans and trucks). ▪ Place of storage and distribution. ▪ Preparation of equipment to transport animals. ▪ Planning of routes and deliveries. 	→ See what is contemplated for step 3. → Monitor and regulate captive breeding facilities more effectively: <ul style="list-style-type: none"> → Regular inspections to make sure breeding is occurring, → To check in on numbers of reproductive individuals and those that come from nature. → Fine facilities for any issues and shut them down if the issues persist.
Activity	Occasional buyer. Professional trafficker and/or middleman.	Departure to the pick-up point. Delivery of the animal by middleman or trafficker. Track 1: Occasional buyer. <ul style="list-style-type: none"> ▪ Return to the starting point without merchandise. 	→ Establish a protocol for customs and police officers. to report wildlife trafficking (ROUTES). → The use of greater technology and security forces to inspect vehicles. → Random stops of vehicles in the factories. → Vehicle Inspection. → Dogs trained to detect snakes.

			→ CCTV.
Post-activity	Occasional buyer. Professional trafficker.	Track 2: Professional trafficker. <ul style="list-style-type: none">Return to the starting point without merchandise.	

Indicators of smuggling

Documents

Pay attention to CITES permits to detect:

Non-valid Permits	<ul style="list-style-type: none"> ▪ An expired permit. ▪ Description of the specimens that does not match what is in the certificate. ▪ The permit has not been issued by a CITES Management Authority or, ▪ The country of destination has prohibited that species.
Fake or altered Permits	<ul style="list-style-type: none"> ▪ A legitimate permit has been altered after it was issued. ▪ Paper or printing is abnormal in appearance (e.g. thickness, texture and/or colour; the permit provided is a photocopy and not an original; presence of ink spots - often indicating that a thinner has been used); ▪ Stamp, seal or security stamp showing signs of having been copied. ▪ Certificate number has been altered.

(Zavagli 2021)

A problem for enforcement may be the lack of adequate training. This may impair the ability of personnel to correctly identify species or to evaluate the adequacy of the documentation (such as the CITES certificates – see Zavagli (2021, 22) for Indicators to detect signs of falsity in CITES certificate). Aside from inadequate or insufficient training, corrupt or permissive practices on the part of the agents can also be a problem.

Different preventative measures can be proposed, namely: hiring personnel capable of identifying animals; coordination of agents working at the airport with snake experts to identify the animal; requiring the eggshells of animals declared as having been bred in captivity (Lyons & Natusch (2011, 3078-3079); training staff to detect false documentation; and internal accountability systems implemented by agents or agencies outside the airport to prevent corrupt practices.

The second scenario consist in *not declaring (and hiding) the animal*. How to proceed will depend on the size of the specimen, which is determined by its age (egg, breeding, or adult) and species, number of specimens and type of snake (if it is venomous, more or less active or aggressive, etc.). In any case an adequate temperature must be guaranteed, especially if eggs are transported. This can be done using fabrics and other appliances that provide heat. Smaller eggs and snakes (due to their age or species) can be transported in greater numbers than adult specimens. They can be found attached to the traveler's body (track 2), in their personal belongings (track 3), and in the checked suitcase (track 4). For example, dozens of King Cobra pups can easily fit in a carrier. The same happens with ball pythons that, although harmless and non-poisonous, reach a considerable size when they are adults. Therefore, it is very likely that we will find adult snakes on cargo planes (track 5), but to a lesser extent in the checked suitcase or in hand luggage.

Snakes attached to the body or hidden in clothing can be detected in a personal search or with a full-body scanner (body scanner airport). It is a discreet method of transport that can increase the chances of success in those airports that do not have scanners for

people. Therefore, it is important that in this type of airports, more personal searches are carried out on those travelers who wear wider clothing or with several layers in which it would be possible to camouflage objects attached to the body. It is also important to train security personnel and crew to detect suspicious behaviour. ROUTES has designed several guides for this purpose⁷. The interior chart shows the most important indicators to identify a wildlife trafficker in the air transport sector.

Appearance and behavior

Pay attention to (ROUTES website)⁸:

-
- Inappropriate attire
 - Inappropriate clothing
 - Wrong clothes for the climate
 - Large, baggy coats
 - Clothes that do not match the occupation
 - Odd smells
 - Animal sounds/noises
 - Moving clothing
 - Nervous movements/speech
 - Adjusts clothing/jewelery
 - Talks very fast
 - Delayed response to questions
 - Repeats the question
 - Lack of consistency and logic of their explanation regarding the origin, destination, duration and/or reason for their trip
 - Involuntary responses
 - Sweating, dilated pupils
 - Avoids making eye contact
 - Nervousness
 - Shaking and twitching
-

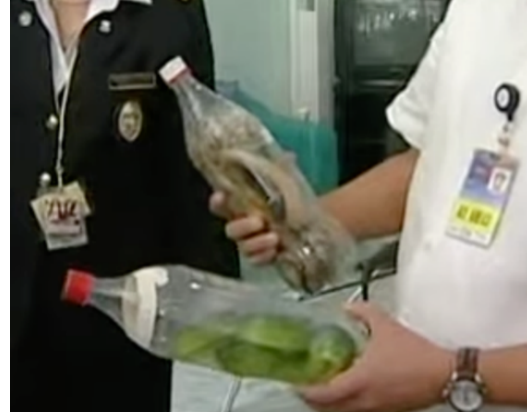
Plastic containers (tupperware, bottles), wooden boxes and cloth sacks are usually used for hiding snakes in hand luggage and checked suitcases, as well as all kinds of conventional objects that serve as containers (potato boxes, toys, books, etc.).

⁷ See: https://routespartnership.org/industry-resources/infographics/air-transport-training-graphics/routes-options-for-digital-display-monitors_16x9cm5-1.jpg/view

⁸ See: How to identify a wildlife trafficker. https://routespartnership.org/industry-resources/infographics/air-transport-training-graphics/routes-options-for-digital-display-monitors_16x9cm5-1.jpg/view



Plastic boxes⁹



Plastic bottles¹⁰



Plastic bottles in a suitcase¹¹



Plastic boxes in a suitcase



Chips box¹²



Inside of toys¹³

Scanners, capable of detecting organic and inorganic materials, are very useful for analyzing these goods, but also random inspections of hand luggage and the use of

⁹ Source: SEPRONA.

¹⁰ Source: AP Newsroom. <https://newsroom.ap.org/editorial-photos-videos/home>

¹¹ Source: AP Newsroom. <https://newsroom.ap.org/editorial-photos-videos/home>

¹² Source: La Vanguardia. <https://www.lavanguardia.com>

¹³ Source: The News Minute. <https://youtube.com/shorts/jljb9lfwArw?feature=share>

trained dogs. For example, in Benin (Africa) dogs have been used to detect pangolins and elephant ivory.

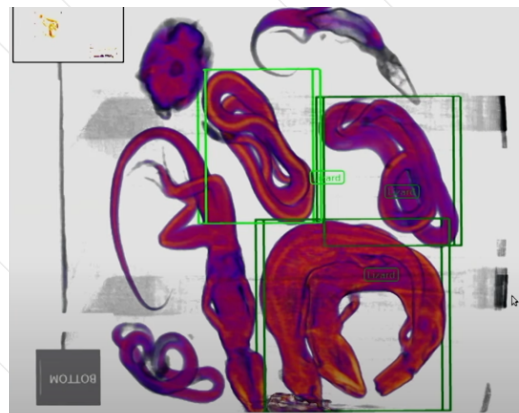
On other occasions, smuggling is carried out in cargo planes, using wooden or cardboard boxes and packages (track 5). This means that there are two coordinated actors, one at origin, who prepares the merchandise, (the middleman or professional trafficker), and another at destination to collect it (usually the buyer). The third actor would be the express courier (transport company) that unwittingly participates in the illegal shipment of the animal. This is the transport scheme that follows the sale of animals online that we will see in step 3. Sending through this way always requires false documentation, whether the shipment of the snake is declared or hidden, and possibly the contact details of the sender and receiver.

It may happen that the actors send the snake declaring its shipment as if it were legal with false documentation (track 1) or mixed with similar legal species. The latter happens when permits are granted to species of the same group with different levels of protection and trade requirements (IMO, 2021, 10-11).

Obviously, those agencies that employ fewer resources – technological and human – will be more vulnerable to smugglers. For example, the use of 3d x-ray technology (see image below) is a very useful. The shapes of trafficked animals are very characteristic and could be used to develop automatic image recognition processes or *Machine Learning*. Similarly, courier company staff training is essential¹⁴ so that: they are aware of the problem; they learn to recognize suspicious outlines (contornos) inside packages and indications of document falsification; and there is adequate coordination with control agencies when they find undeclared live animals or suspicious packages.



3d x-ray scanner¹⁵



Machine learning applied to wildlife trafficking¹⁶

¹⁴ For example, the courier company DHL in December 2014 was one of the first to join the Working Group of The United for Wildlife (UfW) Transport Taskforce. It brings together the transportation industry, conservation leaders and policy experts to identify how traffickers use logistics transportation to their advantage, and how they could break the links between buyers and sellers of illegal goods.

See: <https://lot.dhl.com/stopping-wildlife-trafficking-in-its-tracks/>
 United for Wildlife. <https://www.unitedforwildlife.org/what-is-the-transport-taskforce>

¹⁵ Source: SEPRONA

¹⁶ Source: ABC Science.

https://www.youtube.com/watch?v=Mue7GnzvcQU&list=PLwk9KuQDYFGf-5IM4JrtPLKFRD0d_FdPJ&index=2

STEP 3: Commercialization

Overview

- Live snakes are sold in shops, fairs or meetings of herpetology hobbyists, and through the internet (using courier services).
- Buyers (or consumers) of snakes can be professional buyers (distributors and owners of physical and virtual stores) and amateur individuals.
 - Professional buyers seek to obtain an economic benefit by marketing the snakes by selling them to other distributors and hobbyists.
 - Amateur individuals acquire the specimens as a hobby related to their passion for herpetology.
 - Hobbyists usually communicate through the internet to exchange knowledge. They sell or exchange through ads or post certain specimens more desired, due to their rarity or geographical location (Auliya, 2003, 43-44). They can set up working groups, clubs, and societies. Similarly, it is common for them to organize fairs and events as a meeting point for their community (reptile fairs).
 - Snake hobbyists tend to be young adult men, often students. Having peers or friends with snakes, visiting a snake exhibition, or seeing them on social networks, were the main reasons to acquire a specimen. Most of them live with snakes for more than two years and have other reptiles as pets (Kunisi et al., 2021, 1791).
- Cyberspace plays an essential role in all scenarios of the sale of animals thanks to the opportunities it offers to conduct business internationally, putting in contact different types of users globally quickly and without intermediaries (Alacs & Georges, 2008). It also guarantees the privacy and anonymity of sales. These advantages favor the expansion and growth of the pet market, with the internet being a key tool for illegal activities. (IFAW, 2005, 2).

This script analyzes three key scenarios for snake marketing: pet shops, fairs or meetings about reptiles, and cyberspace. The latter also covers the virtual activity of the previous scenarios.

Scene 1: Pet shops

The sale of pets, whether companion or exotic, are subject to the legal requirements for the sale of live animals in stores (adequate facilities, sanitary conditions, medical assistance, etc.) and to national and international regulations on trafficking in species. The purchase of animals from illegal distributors, as well as the falsification of the corresponding documentation on the origin, species and age of the specimen, is an offense. The sale of illegal specimens as if they were legal brings great benefits to sellers because obtaining them on the black market is cheaper and the profit margin greater. Although carrying out the illegal activity in a private space of public access and known to the authorities (the shop) favors the identification and inspection of local authorities and, therefore, the risk of being arrested. The illegal purchase of animals for subsequent sale requires knowing actors who are engaged in the export and / or transport of animals and, possibly, document falsification. In this sense, contact through the internet and social networks is essential. It also involves advertising the specimens both in the physical and virtual stores, as well as having the necessary resources for their care.

To intervene in the illegal market in the aforementioned scenarios, general preventive measures could be adopted based on informing citizens about: (1) the sanctions and/or punitive measures associated with these behaviors and; (2) a ban on the sale of animals from animals that, being legal in European countries, have been illegally captured, possessed and transported in other countries. More specific measures to be applied in the shops (and their websites) are those aimed at ensuring greater traceability of commercial activities through consumer information, the creation of records and the carrying out of inspections involving all stakeholders (see table below).

Scene 1		Pet shops	
Scene classification	Cast	Corresponding activities	Interventions
Preparation	Seller (specialist commercial or vendor).	The actor is aware of: + The income generated by their sale, especially of specimens obtained at a lower price for having an illegal origin. - Risk of being detected by inspections. - Risk of being detected by consumer complaints. - Severe penalties if arrested.	→ Inform citizens about the sanctions and/or punitive measures associated with these behaviors.
Pre-activity	Seller and middleman (specialist commercial or vendor).	Meet traffickers who export and transport illegal specimens. Obtain or create false documentation to comply with the legal requirements of the sale. Advertise the sale of these animals (in the store and online). Having a suitable place and the material and human resources necessary to breed the snakes.	→ Require stores to report on legal requirements for sale, about the prevalence and consequences of illegal traffic, and the sanctions imposed (both in the physical and virtual stores).
Activity	Seller and buyer (specialist commercial or vendor).	The vendor sells the snake to the final customer with false documentation. Track 1: Sale in the shop. Track 2: Sale in the Internet store.	→ Track 1: Sale in the shop <ul style="list-style-type: none"> • Create a register of pet shops. • Create a register of distributors or sellers of animals on purchase invoices. • Create a registry of veterinary clinics that treat reptiles. • Require these clinics to require the corresponding documentation to their clients. • Require these clinics to report cases with indications of illegality. • Create a register of local reptile food stores. • Conduct periodic unannounced inspections by persons trained in: <ul style="list-style-type: none"> ○ Identify snakes. ○ False documentation ○ Sanitary measures. • Compulsory inform consumers about the legal requirements of the sale, about the prevalence and consequences of illegal traffic, and the sanctions imposed.

			<ul style="list-style-type: none"> • Require the consumer to provide a specimen of their identity document, contact address and usual veterinarian. • Require the consumer to notify the competent authority of the acquisition of the pet and its registration in an official register. <p>→ Track 2: Sale in the Internet store</p> <ul style="list-style-type: none"> • Create a register of distributors or sellers listed on sales invoices. • Create a register of pet shops. • Create a register of reptile food stores. • Monitor sales through the internet by examining the type of species, age, declared origin, price, delivery conditions, etc. to detect signs of illegality. • Require websites to inform about the legal requirements of the sale, about the prevalence and consequences of illegal traffic, and the sanctions imposed.
Post-activity	Consumer	<p>Once the animal is delivered, it is owned as a pet by the buyer or resold.</p> <p>See STEP 4.</p>	→ See STEP 4.

Scene 2: Reptile fairs

Reptile fairs take place in various parts of the world and their presence has increased since the 90s (Auliya, 2003). In them you can find hundreds of stalls mostly of professional traders that attract professional buyers, hobbyists, and curious visitors. Dates and venues are usually advertised through specialized websites and Facebook groups. One of the largest fairs in Europe is the *Terraristika*¹⁷ held in Hamm (Germany) since 1995. Today it has a quarterly frequency. Each fair has exhibition halls whose size, quality of facilities and security measures vary depending on the size of the event. In the stalls of the fair, reptiles are usually identified with labels indicating the common and scientific name of the specimen, sex, origin and, sometimes, its belonging to a specific CITES appendix (Auliya, 2003). Larger fairs tend to bring together more vendors and offer a larger stock of animals and species. This is a perfect advertising for buyers looking for rare and scarce specimens for their own possession or subsequent resale. In this sense, it can be very lucrative to buy specimens at a fair (even if you must travel to another country) and resell them in countries where they are considered more exotic or rare, or outright prohibited.

Fairs offer a good opportunity for legal business (the most common), but also for illegal business, as it brings together sellers and potential buyers from all over the world in the same space and time. Therefore, sellers who intend to attend will reserve their place in advance and acquire a stock of animals and utensils sufficient to guarantee the sale. It is also likely that they will publicize the event through the internet. Professional vendors with stalls will be less suspected of committing illegal activities, although they may use these by using, for example, false documentation or mislabeling specimens. Auliya (2003, 45) detected in his study that some specimens did not have legible labels or simply did not have a label, did not include enough information (e.g., showed only prices) or was false. Some professional vendors with reserved stalls may also have a side illegal business, which is usually carried out in the vicinity of the fair, in places such as nearby parking lots or hotels.

On the other hand, some vendors do not have a stand at the fair and conduct their business in the parking lot or its vicinity. They are usually located in these places moments before the event starts or at some point during its celebration. They are set up by professional or private sellers who take advantage of the fair to attract customers or meet customers previously contacted online. In this context, there are more opportunities for illegal sales due to less control. For example, a professional seller can sell an animal by giving a document to the buyer proving the change of ownership of the animal, the type of species and its non-wild origin (due to its possible prohibition) such information being false. Prohibited specimens may also be sold without documentation completely clandestinely and at cheaper prices. In both cases payments are made in cash, PayPal or Bizum and without invoice to avoid leaving a trace.

Consequently, the intervention in this scene must be carried out both inside and outside the facilities, including monitoring through the internet on specialized websites, forums, and social networks. Before the fair begins it is important to require organizers to inform participating sellers about the requirements of the illegal sale and its criminal consequences. Also identify which places and times are the most likely for the encounter between professional sellers without a stall (or individuals) with potential customers.

¹⁷ See: <https://www.tradefairdates.com/Terraristika-M1165/Hamm.html>

Again, the creation of records of vendors participating in the fair and the animals they sell would provide greater control and monitoring of commercial activity. Another mandatory measure during the celebration of the event is to require the organizers and vendors with a stand to inform about the legal requirements of the sale, about the prevalence and consequences of illegal traffic, and the sanctions imposed (with pamphlets, posters, etc.) and use very detailed labels of each animal exposed.

Conducting inspections and examining documentation provided by sellers is also essential to avoid illegal sale. Finally, requiring each new vendor who wants to participate in the fair a criminal record certificate would be useful to prohibit access to the facilities to subjects with previous crimes of illegal trafficking or animal abuse.

Scene 2		Reptile fairs	
Scene classification	Cast	Corresponding activities	Interventions
Preparation	Seller (specialist commercial or vendor).	The actor is aware of: + The income generated by their sale, especially rare, scarce, and protected specimens that can be resold in other countries. + The large congregation of potential customers. - Risk of being detected by inspections at fairs. - Severe penalties if arrested.	→ Inform citizens and costumers about the sanctions and/or punitive measures associated with these behaviors.
Pre-activity	Seller (specialist commercial or vendor).	Track 1: Professional salesperson with stall at the fair: They must reserve their stalls in advance. Ensure and obtain sufficient stock of specimens before the fair, as well as all sufficient utensils. Generate false labels and documentation. Dissemination of your merchandise and participation in the fair in the physical and online store, in other specialized websites, social networks, etc. Potential side business outside the fair (see Track 2) Track 2: Professional salesperson without stall and private salesperson: They will look for places in the immediate vicinity. Ensure and obtain sufficient stock of specimens before the fair, as well as all sufficient utensils. Generate false documentation. Dissemination of your merchandise and participation - without stall- in the fair through the internet indicating place and hours of visit. Close appointments for that day with customers to carry out the exchange of goods there.	→ Require those responsible (organizers of fairs) to inform sellers about the requirements of legal sale and the consequences of illegal sale. → Investigate through the internet the most frequent places and times in which sellers without stalls and customers are cited.
Activity	Seller and buyer (specialist commercial or vendor).	The vendor sells the snake to the final customer with false documentation or absence thereof.	→ Track 1. Professional salesman with stall at the fair: <ul style="list-style-type: none"> • Create a register of vendors participating in the fair. • Create a register of the animals being sold (species, origin and invoice number).

			<ul style="list-style-type: none"> • Require managers and sellers to report on the legal requirements of the sale, about the prevalence and consequences of illegal traffic, and the sanctions imposed (with pamphlets, posters, etc.). • Require sellers to have very detailed labels. • Carry out inspections at the posts to verify that the specimens and their documentation are lawful. • Require the identity document and contact address of the consumer. • Require a criminal record certificate from sellers. • Prohibit access to the facilities to vendors with criminal records in illegal trafficking or mistreatment of animals. <p>→ Track 2: Professional salesman without stall and private seller:</p> <ul style="list-style-type: none"> • Carry out inspections in the vicinity of the fair and those places identified through the internet potential for marketing.
<p>Post-activity</p>	<p>Consumer</p>	<p>Once the animal is delivered, it is owned as a pet by the buyer or resold.</p> <p>See STEP 4.</p>	<p>→ If the country in which the animal was sold is the same as the country in which the buyer declares to reside and the buyer has a register of exotic pets, contact the consumer if he has not registered the snake in the register after the deadline for doing so has expired.</p> <p>→ See STEP 4.</p>

Scene 3: Cyberspace

The Internet is a global market with countless users who are dedicated to the sale of millions of items quickly and anonymously. This favors legal and illegal purchasing (IFAW, 2005, 7) and the creation and maintenance of commercial networks for animal trafficking. Buyers, intermediaries and sellers are connected through the internet to carry out their transactions quickly, safely and efficiently in a globalized market. The virtual pet market is a segmented market that occurs mostly in the surface web (Lavorgna, 2015). There is a wide variety of pets for sale and users interested and specialized in them. For example, snake enthusiasts frequent specialized websites to have their own spaces in which to communicate and share content. These places are easily identified by illegal sellers while facilitating access to their potential customers (Lavorgna, 2015, 364). In addition, accessing the different platforms for selling animals on the internet is quite easy although in some Facebook groups it is necessary to ask permission to join (Jensen et al., 2018, 3-5).

Two of the most important actions in criminal activity through the internet are the advertising of products sold on different platforms (bait) and the contact that, because of them, is established between seller and buyer to materialize the transaction. Regarding the first, there are several indicators that can be useful to detect illegal trade ads (Lavorgna, 2015, 360).

Scene 3		Cyberspace	
Scene classification	Cast	Corresponding activities	Interventions
Preparation	Seller (specialist commercial or vendor).	The actor is aware of: + The income generated by their sale, especially rare, scarce, and protected specimens that can be resold in other countries. + Easy to attract customers interested in snakes around the world. + Anonymity of the transaction. + Speed of sale. + Low risk of being detected/sanctioned. - Severe penalties if arrested.	→ Inform citizens about illegal trafficking and the sanctions and/or punitive measures associated with these behaviors. → Improve the legal framework for online pet purchases to offer greater safety and protection. → Fund research aimed at analyzing pet trafficking on the Internet to obtain more data on its frequency and characteristics. → Require websites specializing in selling pets to report on the legal requirements of the sale, about the prevalence and consequences of illegal traffic, and the sanctions imposed. → Require websites specializing in selling pets to report indications of illegal sale (see figure above).
Pre-activity	Seller and middleman (specialist commercial or vendor).	Meet traffickers who export and transport illegal specimens. Ensure and obtain sufficient stock of specimens before the fair, as well as all sufficient utensils for transport. Obtaining or creating false documentation to mask the legal requirements of the sale. Advertise the sale of these animals in: specialized websites, forums, social networks (Facebook, YouTube, etc.). Having a suitable place and the material and human resources necessary to breed the snakes.	→ Require websites specializing in selling pets to report indications of illegal sale (see figure above). → Require websites specializing in selling pets to enable visible and direct reporting channels (for example, a mailbox or chat) to report indications of illegality. → Have police units specialized in this type of crime. → Investigate through the internet the most frequent physical places where sellers and customers are cited.
Activity	Seller, middleman and buyer.	The vendor sells the snake to the final customer with false documentation or absence thereof. Contact potential customers to inform them about the merchandise and mode of purchase (information and persuasion techniques). Organize appointments with clients to deliver the specimen to a physical place. Track 1: Delivery via courier companies (see STEP 2). Track 2: Hand delivery. They will look for public places. Possible use of intermediaries.	→ Carry out a follow-up by the competent authorities of each country of those internet platforms specialized in the sale of reptiles or snakes (especially suspect ones). → Require websites specializing in selling pets to report signs of illegal sale (see figure above). → Have police units specialized in this type of crime. Track 1. Delivery through courier companies (see Step 2 intervention). Track 2: Hand delivery. → Investigate through the internet the most frequent places where sellers and customers are cited.



			→ Develop special operations of the specialized police to detect illegal sales. For example, posing as a potential customer.
Post-activity	Consumer	Once the animal is delivered, the buyer can own it as a pet or resell it to third parties. See STEP 4.	→ See STEP 4.



Indicators of illegal sale on the internet

- Very low prices
- Invented reasons to sell with urgency the animal (appearance of bargain).
- Great availability of very young specimens
- Great availability of specimens of different species and origins
- The possibility of sending animals in anonymous packages via regular mail.
- Different ads and usernames with the same contact phone number

Sellers usually use a single name and almost always fictitious, advertising different ads with different names, although the phone number is usually the same. They use translators to place the same ad in different languages and pictures to highlight the characteristics and qualities of the animal to attract potential buyers (Lavorgna, 2015). Ads usually show the price, the location of the seller, the country of origin of the animal and the number of specimens for sale. Sometimes it is specified whether it was bred in captivity or is of wild origin. Those that do not specify the origin can be considered of wild origin and their survival rates are usually lower, which discourages purchase. The most used terms are wild caught (WC), captive-bred (CB), captive-born and bred (CBB), farm-bred (FB), captive hatched (CH) and long-term captive (LTC) (Jensen et al., 2018, 3-5).

Once the customer is interested in an animal, contact the seller through a forum, private chat message, email, mobile phone, etc. The seller will try to persuade the buyer to purchase the product by ensuring the quality and reliability of the purchase. It is possible that I send you more photos to show some characteristics of the animal that are especially attractive to the buyer (character, if it is well trained, state of health, tonality, and intensity of colors, among others). Being illegal pets and without documentation, the seller will try to convince the client by indicating that without the proper documentation pets are much cheaper, downplay the fact of not having papers or invent any excuse to justify their absence. If the client asks about the rapid availability of the specimen, it can be argued that it comes from a hatchery. If the customer trusts the transaction, they will discuss pricing and delivery method. Although most purchases are online, through courier companies due to the ease of the reptiles to be transported (see STEP 2), there may be a physical delivery of the animal. In the first case (track 1) the payment is usually made a pre-paid cards to be recharged online and a supervision of the shipment by ordinary mail (Lavorgna, 2015).

In hand delivery (track 2), it usually occurs in public places, near roads and parking lots, or during fairs or animal exhibitions (Lavorgna, 2015, 364). To know the specific places where the meetings take place, it is necessary to investigate through the internet the places where sellers and customers are cited. For example, posing as a potential customer.

STEP 4: Illegal possession

Overview

- Having a snake at home as a companion animal can be a crime if its possession is prohibited or they do not meet certain legal requirements. Illegal possession is committed mainly by herpetology hobbyists and private sellers.
- Snake hobbyists are potential customers of professional and private sellers. They usually frequent specialized internet platforms, reptile fairs and meetings.
 - The illegal possession of a snake is easy to conceal:
 - They can easily be kept at home.
 - Most of them do not require large spaces, nor excessive care, nor are they noisy or odorous.
 - The food products and utensils necessary for their maintenance are easily acquired online, as well as endless information about each species, care, and handling.
- Most of the hobbyists have snakes of docile character and easy handling (for example: the corn snake, the molurus python, the regius python, etc.), but some look for more exotic and, sometimes, venomous specimens. The possession of these venomous species is a serious risk to the health of its owner, the people who live with them and the rest of the community. These species require greater knowledge and experience in their handling, which the owners often do not have. When bites from these snakes occur in importing countries, the result can be fatal, especially if they are snakes with neurotoxic venom.

This script analyzes the ownership of pets at home to try to identify indicators of illegality and the most appropriate intervention at each stage of the scene. The pre-activity is the acquisition in the commercialization being applicable to all the interventions of STEP 3, as well as offering to reward citizens who report suspected cases of snake possession. In this way, it seeks to involve the neighbors of the consumer who, possibly, can know their hobby.

Once the snake is moved to its new home, you must have a place conditioned for tenure. Generally, terrariums are used to ensure adequate light, humidity, temperature, and ventilation. Venomous snakes require a special terrarium of greater security, although not all owners use it. As for feeding, depending on the species, they can eat insects (grasshoppers, crickets, cockroaches, etc.), worms, mice, guinea pigs, hamsters, fish, etc. Regarding hygiene, a substrate is usually used in the soil of the terrarium that is changed periodically. Therefore, both the periodic purchase of food and hygiene products, as well as special terrariums for venomous snakes, can be indicative of owning this pet at home. In this sense, obtaining a record of local stores that sell snake food and accessories and veterinary clinics contacted for snake-related medical emergencies can provide information about consumers (customers) in a certain area.

Scene 1		Home	
Scene classification	Cast	Corresponding activities	Interventions
Preparation	Consumer	<p>The actor is aware of:</p> <p>Not possessing the documentation required for certain specimens is a crime.</p> <p>The rarest and most exotic specimens may be illegal.</p> <p>+ The possibility to easily acquire legal and illegal animals in the STEP 3 scenarios.</p> <p>+ Illegal specimens may be cheaper.</p> <p>+ The chances of being arrested are low.</p> <p>+ The possession of more exotic or dangerous specimens grants status among snake hobbyists.</p> <p>- In case of detention, the penalties may be severe.</p>	<p>→ All interventions in STEP 3 apply.</p> <p>→ Offer rewards to citizens for reporting suspected snake ownership.</p>
Pre-activity	Consumer	<p>The consumer will look to buy a snake in the scenes of STEP 3 (in physical stores or online, at fairs and through cyberspace).</p> <p>Once the pet is acquired, it will be transported to the home.</p>	<p>→ All interventions in the pre-activity and activity of STEP 3 apply.</p>
Activity	Consumer	<p>Acquisition of suitable accessories for the animal (terrariums, tweezers, forceps, substrates, etc.) and food.</p> <p>Manipulation of the snake (feeding, cleaning, etc.).</p> <p>Share pictures and videos online.</p>	<p>→ If the country in which the animal was sold is the same as the country in which the buyer declares to reside and the buyer has a register of exotic pets, contact the consumer if he has not registered the snake in the register after the deadline for doing so has expired.</p> <p>→ Get a record of stores that sell snake food and accessories.</p> <p>→ Obtain a record of veterinary clinics contacted for snake-related medical emergencies.</p> <p>→ Require medical services to notify authorities of all cases of snakebites.</p> <p>→ Research through the internet the contents published by snake fans.</p> <p>→ Improve coordination between veterinary clinics, medical services and police.</p>
Post-activity	Consumer	<p>When detached from the animal (by death, transfer to third parties, release or escape).</p>	<p>→ Identify and investigate cases in which non-native snakes have been found by neighbors in the area.</p> <p>→ Identify and investigate cases where non-native snake attacks have occurred in the community.</p> <p>→ Analyze the number and type of invasive snakes in the community.</p>

Sometimes during the handling of the snake accidents can occur that cause bites. These cases are increasingly common because the ownership of exotic pets is increasing and, therefore, the attacks more frequent (Warrell, 2009, 594). The most serious incidents require the intervention of medical services and hospital admission. Bites caused by venomous snakes are the ones that most compromise human health, causing death due to the lack of antidotes in non-native countries of the snake (Gutiérrez et al., 2017; Kasturiratne et al., 2008; Laina et al., 2021). Warrell (2009) determined that the owners who had suffered bites were young men fond of snakes and with a possible psychopathology. Bites occurred when they handled the animal to feed it, clean the terrarium and extract the venom. They were most common during the evening and after consuming alcohol and other substances. Consequently, the number of calls made to emergency services, medical care and cases of death may be indicators of the illegal possession of a snake in the home. Requiring medical services to notify authorities of all cases of snakebites and improving coordination between veterinary clinics, medical services and police can be effective intervention measures.

Another possible activity that evidences the possession of the animal is its exhibition on different internet platforms. As mentioned, in the study by Kusrini et al. (2021, 1791) it was determined that in most cases they were young adult male students whose motivation to have snakes as pets had been to observe them online and in exhibitions, and because it was simply "cool". As in any other hobby, this implies a certain culture of exhibition among snake fans and therefore a greater risk of recording their activities and possible arrest. Therefore, it would be necessary to investigate and follow up on these contents with a view to possible police inspections.

Indicators of Illegal possession

- Absence of inscription of the snake in the corresponding record.
- Periodic purchase of feed and substrate for snakes.
- Purchase of special terrariums for venomous snakes.
- Dissemination on the internet of content about protected, rare or venomous snakes.
- Visits or calls to veterinarians for medical problems of snakes (burns, fungi, etc.).
- Calls to emergency services for the presence of snakes.
- Snakebite calls to emergency services.
- Hospital admissions for bites.
- Snakebite deaths.
- Presence of invasive snakes.

Illegal possession of the snake ends when it dies, is transferred (by sale or donation) or is released or escapes. Resale encourages the illegal trafficking of pets while the release of the animal (voluntary or involuntary) causes serious damage to human and environmental health. In the press of each country there are numerous incidents of children suffocated by large pythons, neighbors who find snakes in common areas of buildings, people bitten by non-native venomous snakes, etc. Non-native released snakes can behave as invasive and destructive species of native fauna. This risk motivates that some species are classified in CITES as prohibited or that, directly, the possession of any type of snake as a pet is prohibited in each country. They also act as transmitters of disease-causing pathogens (Burrige et al. 2000; Yabsley et al., 2015; Ebani, 2017). Again, the indicators and interventions foreseen in the previous step

(activity) would be applied, as well as: identify and investigate the cases in which attacks of non-native snakes have been found and produced to neighbors in the area and identify the number and type of invasive snakes in the community with the collaboration of specialized centers.

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Authors:

Lorea Arenas García

University of Extremadura, Spain.

Email: lorea@unex.es

Nerea Marteache Solans

California State University, San Bernardino.

nmarte@csusb.edu

Reviewers:

José Manuel Quintana Touza

Major of Guardia Civil- SEPRONA and Chair of the EnviCrimeNet.



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