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**Wildlife crime, violations of CITES from the
point of view of the Czech customs**

MASTER'S THESIS

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Declaration

I hereby declare that I have done this thesis entitled *Wildlife crime, violations of CITES from the point of view of the Czech customs* independently, all texts in this thesis are original, and all the sources have been quoted and acknowledged by means of complete references and according to Citation rules of the FTA.

In Prague

.....

Tereza Jechová

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Abstract

Illegal wildlife trade is one of the major causes of world biodiversity loss. This thesis aims to analyse qualitative and quantitative dimensions of illegal wildlife trade detected at Václav Havel Airport, Prague, Czech Republic.

The thesis consists of two parts. The first part deals with the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Czech customs services. CITES is an agreement listing animal and plant species threatened by trade. This convention is closely related to the IUCN Red List, which describes the threat status of species. Wildlife crime and trade belong to the fastest-growing categories of international crime, threatening not only biodiversity but also national security. Furthermore, this study investigates why people illegally transport commodities and what role customs officers play in interceptions. The thesis provides insight into how customs officers work and cooperate with other institutions.

The practical part consists of case studies of Czech customs officers. The results showed that plant species are more frequently illegally transported in the Czech Republic, while animal commodities or living reptiles are more commonly transported worldwide. It was found that the COVID pandemic affected illegal transport in passengers' luggage, but offenders found other ways to transport their goods.

Key words: CITES, Czechia, customs, smuggler, airport, violation, Václav Havel Airport

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List of the abbreviations used in the thesis

CITES - Convention on International Trade in Endangered Species of Wild Fauna and Flora

IUCN – International Union for Conservation of Nature

CEI – Czech Environmental Inspectorate

NGOs – Non Governmental Organisations

1. Introduction and Literature Review

Ecosystems necessary for the future are in danger. They are threatened by serious transnational organized environmental crimes, such as illegal logging, poaching and wildlife trafficking, illegal fishery, illegal mining and depositing of toxic waste (Nellemann et al. 2014). These activities lead to habitat loss as well as to animal and plant extinction.

Habitat loss is a massive destruction of a species natural habitat influenced primarily by hunting, which is also a major cause of animal extinction (Singh et al. 2021). Hunting is one of the most common causes of wildlife decline in the tropics. Hunting and habitat loss lead to the rapid decline of tropical fauna and become a major conservation concern. This problem particularly affects “biodiversity hotspots”, where a disproportionate number of the animal species struggle to survive in landscapes affected by humans (Flesher & Laufer 2013).

Although the number of conservation areas is higher, local and foreign people still exploit the natural resources, and most designated reserves are almost indistinguishable from unprotected areas. Protection of nature and wildlife is very difficult in areas where hunting traditions are intense because the locals continue to hunt to maintain their traditions, for commercial purposes (illegal trade of dead or live animals/plants, products from animals/plants) and because hunting brings them pleasure (Flesher & Laufer 2013).

Nellemann et al. (2014) estimate the number of African Savanna Elephant (*Loxodonta africana*) killed yearly at 20 to 25,000. The population of African Forest Elephants (*Loxodonta cyclotis*) was estimated to decline about 62% between 2002-2011. 94% of poaching of rhinos (Rhinocerotidae) take place in Zimbabwe and South Africa, where the remaining populations are. Poaching in these countries increased from 50 cases in 2007 to more than 1,000 cases in 2013. Rhinos have become extinct in several places in Africa and Asia. Poachers kill these animals for the high value of their ivory; for example, in 2013, a rhino horn was worth approximately USD 63,8-192 million (Nelleman et al. 2014).

However, this problem is not only related to hunting, but also to the exploitation of highly valued timber species such as mahogany or rosewood. All these examples of

criminal activity against wildlife and forestpose a significant threat to national security, because the money from these illegal activities supports organised crime and terrorist groups (Smart et al.2021).

These are the reasons why the CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) was established. People must protect animal and plant species, and we must not support organised crime and terrorists. Many illegally transported animals and plants, live or dead, are illegally transported across borders. The custom services and other authorities are dedicated to counteracting the illegal wildlife transportations. In our country, we have the Customs Administration of the Czech Republic.

1.1. CITES

CITES stands for the Convention on International Trade in Endangered Species of Wild Fauna and Flora. It is an international agreement between authorities. This agreement should protect species against international illegal trade with animals and plants and its aim is to keep these species alive. CITES were first formed in 1973 during the meeting of members of IUCN and it entered into force on 1st July 1975 (CITES 2023).

IUCN is the world's oldest global environmental organisation and the World Conservation Union. IUCN Red List classifies plants and animals on the basis of their likelihood of extinction. The IUCN Red List serves as a manual for revising the appendices of important international agreements such as CITES, which must ban the trade of threatened species and products made from them (IUCN 2024).

These days, the trade with wild animals and plants crosses the borders between countries. Therefore, it requires cooperation on an international level to protect certain species from extinction. There are more than 40,900 species (including 6,610 animal species and 34,310 plant species). These are listed in three groups, called Appendices. Species are divided according to how threatened they are by international trade (CITES 2023). The strictest degree of protection, and thus also the terms of their trade, applies to species included in Appendix I of the Convention (Švarc 2020, Figure 1).

	Appendix I	Appendix II	Appendix III
FAUNA			
Mammals	334 spp. (incl. 21 popns) + 14 sspp. (incl. 4 popns)	523 spp. (incl. 22 popns) + 9 sspp. (incl. 4 popns)	46 spp. + 11 sspp.
Birds	156 spp. (incl. 2 popns) + 5 sspp.	1294 spp. (incl. 1 popn) + 6 sspp.	60 spp. (incl. 31 popns)
Reptiles	105 spp. (incl. 7 popns) + 4 sspp.	870 spp. (incl. 6 popns)	215 spp. (incl. 1 popn) + 8 sspp.
Amphibians	24 spp.	351 spp.	5 spp.
Fish	16 spp.	224 spp.	19 spp. (incl. 10 popns)
Invertebrates	69 spp. + 7 sspp.	2193 spp. + 1 sspp.	27 spp. + 3 sspp.
FAUNA TOTAL	704 spp. + 30 sspp.	5466 spp. + 16 sspp.	372 spp. + 22 sspp.
FLORA			
	395 spp. + 4 sspp. + 12 var.	33764 spp. (incl. 110 popns)	134 spp. + 1 var.
GRAND TOTAL	1099 spp. + 34 sspp. + 12 var.	39230 spp. + 16 sspp.	506 spp. + 22 sspp. + 1 var.

Figure 1. CITES Appendices, Source (cites.org)

CITES operates by subjecting international trade with selected species by determined controls. All imports and exports must be authorized through a licensing system. Each member of this Convention must appoint one or more Management Authorities responsible for superintending the licensing system and one or more Scientific Authorities to provide guidance on the effects of trade on the specie's status - Appendices I, II, III (CITES 2023). Species that are threatened with extinction are included in Appendix I. Appendix II lists species that are not threatened with extinction, but the trade must be controlled. Animals and plants that are protected at least in one country are listed in Appendix III (UN 2020). The main control authority in the Czech Republic is the Czech Environmental Inspectorate (CEI), which controls the observance of laws in the field of CITES but also international and national legislation. When the law is violated, the CEI imposes the fines. In case CEI has doubts about suspicious commodities, those can be detained. During the work of CEI's inspectors, they are authorized to enter buildings, breeding houses or other facilities. Inspectors have the option to request an explanation or the presentation of documents and they can view the specimen for the documentation. Another control authority is the Customs Administration, which controls goods for customs supervision, and they have the power to detain suspicious commodities and subjects, after that they contact CEI, and inspectors to check them. In case of violating the law, it is possible to impose a fine of up to

1,500,000 Czech crowns and the specimen may be distrained. In serious cases, it is possible to involve the application of criminal law with specialized authorities such as the Customs Administration or the Police of the Czech Republic for the investigation. Other options to punish the offender can be the imprisonment for up to eight years or a ban on activity. In many countries there are stricter laws, so the offender can be imprisoned for several years and pay higher fines than in the Czech Republic (Czech Environmental Inspectorate 2023).

While exporting species listed in Appendix I, the person must present export permission. It is necessary to have a positive opinion from the CITES scientific body of the country of origin, also certifying that the exported specimen will not threaten the survival of the species. At the same time, the executive authority of the country of export will be duly assured that the specimen was not obtained in violation of the plant and animal protection laws of the country of extraction. Also, if it is a living specimen, the risk of the potential percentage of injury must be minimized during the transport (Švarc 2020). This is a very important action checked by customs and primarily controlled by CITES authority. First, they check the exact animal species exported. They control if the animals are in good condition, along with documentation (evidence from practice: during my summer work at Václav Havel Airport, we were controlling falcons that were exported to the Emirates). The birds' rings on their legs must be checked when controlling birds. Then if the bird has properly fixed wings to minimize the risk of injury and the last step is to control the boxes in which the birds are transported.

Currently, the convention has 184 contracting parties, the Czech Republic has been a contracting party since 1st January 1993 (Ministry of the Environment of the Czech Republic 2023).

The Convention is divided into 25 parts with a preamble. The main parts of this agreement are the appendices including plants and animals divided according to their exposure to trafficking (Švarc 2020).

1.2. Wildlife crime and trade

Wildlife trade and crime are a worldwide problem, wherever the sale and/or exchange of wild animals and plants, dead or alive, parts of animals or plants, or even transformed products appear (WCS 2021). This problem belongs to the fastest growing category of international crime described as an issue by law enforcement authorities worldwide (Runhovde 2015). This illegal activity also leads to a threat to global biodiversity, not only to beautiful mammals, but a threat to marine and terrestrial animals and plant species (Phelps et al. 2022). Wilson-Wilde (2010) lists most threatened birds, reptiles, fish, large mammals and even insects. Collectors or pet traders are often targeted on endangered species. Animals are chosen for their hair, e.g. Tibetan antelope (*Pantholops hodgsonii*) wool. Rhino horns are traded for traditional medicine and belief in medical utility, such as prevention of cancer. The most frequent target country is China, it was found that many species listed on Appendices I, II of CITES are offered for sale there (Wilson-Wilde 2010).

This illegal activity is not only connected to air traffic, but people involved use various modes of transportation. They can use such as industrial shipping or sea routes (Siriwat & Nijman 2018). Other ways of illegal transport are cargo or airmail (European Parliament 2016).

1.2.1. Wildlife trafficking

This activity involves illegal trade, poaching, and smuggling of threatened species, derivatives or products made from them (UNODC 2019). Trafficking involves trade with various animal or plant species. These objects are illegally transported for different reasons, such as ivory for decorations, jewellery or artistic creations (Figure 2). Rhino horns are trafficked for traditional medicine, pangolins are killed for their meat and scales used as Chinese medicament. In China it is believed the scales promote blood circulation, in Africa for physical conditions (UN 2020).

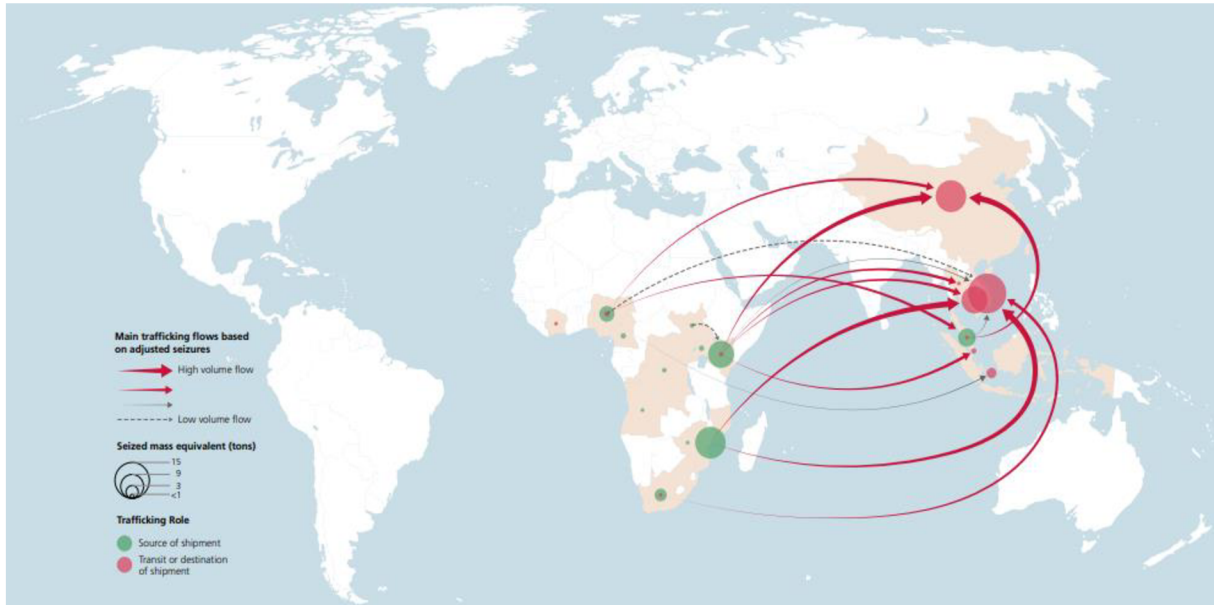


Figure 2. Trafficking flow map (Elephant ivory in 2014-2018), Source (UNODC World WISE Database)

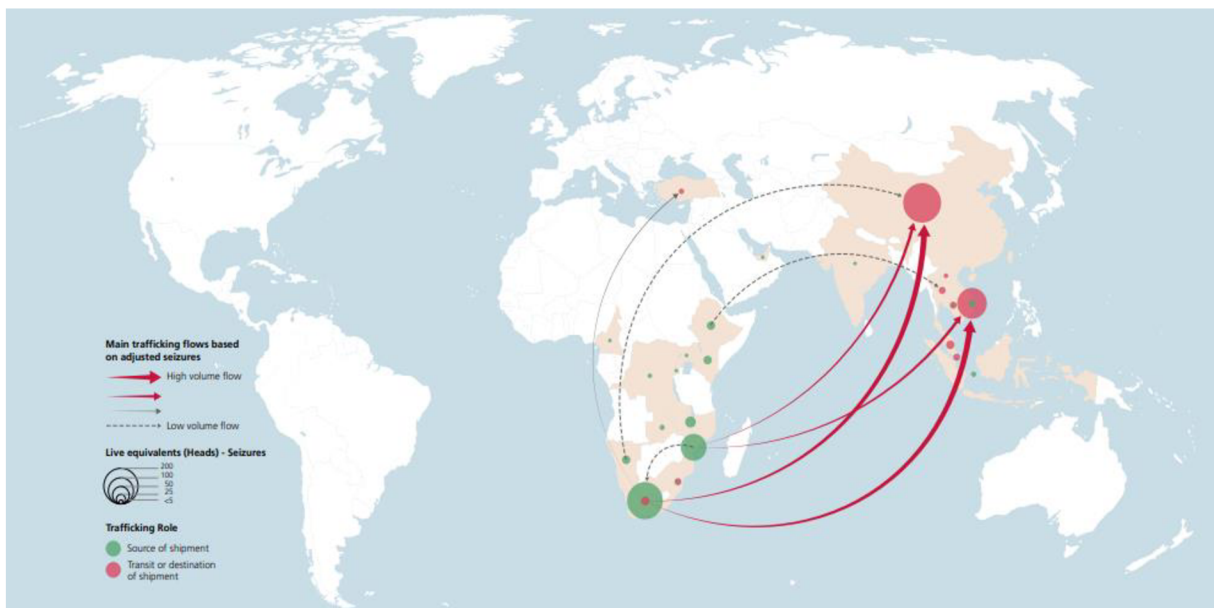


Figure 3. Trafficking flow map (Rhino horns in 2014-2018), Source (UNODC World WISE Database)

The wildlife trafficking use routes across many state borders and illegal traders abuse existing gaps in international and local control systems. The highest demand for rhino horns is in China and Vietnam (UNODC 2017, Figure 3). A lot of world and European Union countries, such as the Czech Republic, Germany, or the United Arab Emirates, are considered the important rhino transits to Asia. Vietnamese and Chinese

nationality prevailed in the illegal transports. In the Czech Republic, there were two operations called Operation Rhino and Operation Osseus. These operations aimed to find trafficking networks of the smugglers (Nožina 2020).

During the COVID-19 pandemic, air traffic was affected, many restrictions were implemented, which had a huge impact on airline traffic worldwide. It has been demonstrated that the aviation industry in Europe experienced 89% decline. However, the cargo traffic remained unaffected, which resulted in an increase of demand for this mode of transportation (Nižetić 2020). Restrictions such as flight bans were introduced worldwide (Sun et al.2020).

1.3. Customs Administration of the Czech Republic

The role of the Customs Administration of the Czech Republic is to collect taxes, customs duty and provide security tasks, and check compliance with duties, such as controlling of travelling people and goods at the airports. The customs administration consists of two main levels. The first one is the General Directorate of Customs located in Prague, whose task is to take part in CITES cases and cooperate with CEI. The second one is customs authorities. There are 15 in the Czech Republic. Customs authorities are located in the county towns (14) and at the Václav Havel Airport – Customs authorities Prague Ruzyně (Celní správa 2023).

1.3.1. Examples of seizures at the Václav Havel Airport

Václav Havel Airport is one of Central Europe's most popular tourist destinations. Even though Václav Havel Airport is smaller than other international airports, the number of handled passengers was about 13,8 million by 2023 (Prague Airport 2023). Even at this airport located in the middle of Europe, the CITES convention is very often violated, in this subchapter there are mentioned some cases that customs officers have caught lately. Customs officers are controlling three main places at the airport. The first one is cargo, huge warehouse located close to the runway. The second one is where passengers go through border control, after which they claim their luggage, and clear the things meant to be cleared. It is called a red or green zone – the red zone is when passengers have something to declare, and the green zone is nothing to declare. If the customs officer catches a passenger the green zone with something to declare, breaking the law starts an

investigation. The last place is in the underground, where the dogs with their handlers check the luggage. If the dog marks the luggage with a suspicious smell, the case is handed over to the colleagues (Prague Airport 2023 - All information provided by customs officers, Civil Aviation Authority, Major Milan Vašák and First Lieutenant Josef Řepa).

During the summer, the customs officers from 81st border surveillance department found shipment from Hanoi in the Skyport cargo, including about 13kg of pills made from *Dolomiaea costus* which is listed at CITES Appendix I (Lenský 2023).

1.4. Cooperation of customs officers and CEI

Upon encountering items that may fall within the purview of the CITES Convention, customs officers contact the Czech Environmental Inspectorate to validate the classification of such items. The CEI assesses the severity of the offence and, in most cases, imposes a fine on the perpetrator. The fines are relatively low and do not become part of the criminal record. In instances of a serious criminal offence, such as the illegal trade of rhino horns or tigers (*Panthera tigris*), the matter falls under the jurisdiction of the Police of the Czech Republic, leading to the prosecution of the offender. The CEI will then confiscate items that fall under the CITES convention. Subsequently these items are used for education and enlightenment or lend them to customs officers, who use them in dog training exercises. In some cases, items must be destroyed because they are too valuable and could attract thieves (Říhová et al. 2022).

1.5. Reasons why animals or derivatives from them are illegally transported

Reasons why people illegally transport protected animal or plant species are diverse. Wildlife trafficking is a huge threat to national security because smuggling can support terrorism and transnational organized crime because wildlife trafficking is gainful (Smart et al. 2021). But often it is also ignorance of the law and lack of awareness of society. The reasons why people illegally transport animals or plants are detailed below. However, one must not forget to mention reasons such as breeders and collectors (Říhová et al. 2022).

1.5.1. Food source

Some animals that are illegally transported are not under the CITES protection but should be mentioned. Killing animals for food may become an illegal activity as well. Shark fins are most demanded in China as the main element of their cuisine. Shark fins depict the tradition and culture of the Chinese people (Shelley et al. 2007). A lot of shark species are threatened by fishing. Over the past decades, shark exploitation has escalated rapidly to meet the increased demand for shark fins from Asian markets. In 2006 it was estimated that between 27 and 73 million sharks were trafficked to fin markets daily (Ferretti et al. 2020). Another widely illegally transported species are the larvae of European eel (*Anguilla anguilla*) called monte. They inhabit freshwaters and they migrate to the sea where they mate (Ginneken & Maes 2006). This fish is listed in the CITES Appendix II (CITES 2023). Juveniles known as “glass eels” are transported in bags with water and smuggled mainly in the luggage to Asia (Figure 4). In the European Union it is prohibited to import or export European eels (UNODC 2019).

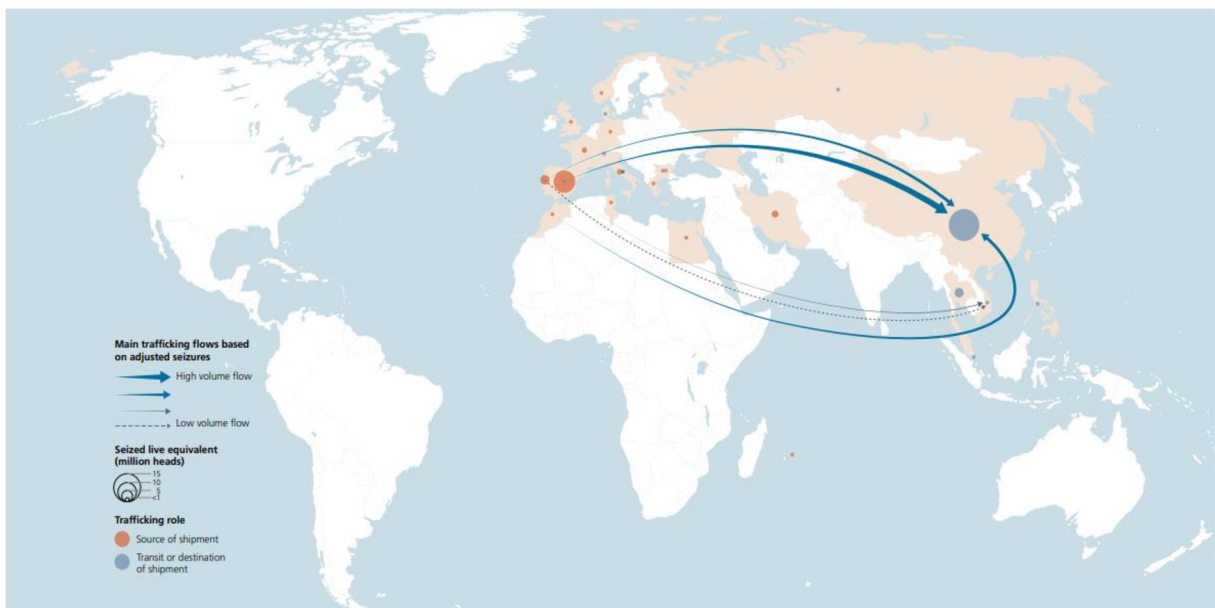


Figure 4. Trafficking flow map (European glass eels in 2007-2018), Source (UNODC World WISE Database)

This illegal activity is common at European airports. In 2019 French customs officers found 30,000 living glass eels in two pieces of luggage heading to China. The weight was 91 kg and was worth 100,000 EUR (UNODC 2019). The Czech Republic is

no exception. Customs officers from Václav Havel Airport discovered 39.6 kg of juvenile European eels in the luggage heading to Vietnam (Figure 5).



Figure 5. Confiscated suitcase at Prague airport with the juveniles of European eel, Source (Major Petr Vácha)

1.5.2. Traditional medicine

Pangolins (*Pholidota*) are threatened by hunting for their scales. They are unusual mammals. Their bodies are covered by scales from osteoderm. This animal species is divided into two genera: Asian pangolins and African pangolins (Figure 6). In both groups there are four representatives (Challender et al.2020). Four representatives from Asia are: Chinese pangolin (*Manis pentadactyla*) distributed in East Asia, it occupies tropical and subtropical rainforests and they dig holes for shelter. They are nocturnal and during the day they hide in burrows. They are killed for scales used in medicine and for cultural aspect (Wu et al. 2020). Indian pangolin (*Manis crassicaudata*) distributed in South Asia, occupies tropical and subtropical forests. This pangolin can survive in altitudes from near sea level to almost 1500 metres above sea level. They are threatened by local use and their scales are trafficked to China to gain money (Mahmood et al. 2020). Sunda pangolin (*Manis javanica*) occupies Southeast Asia except the Philippines. They inhabit diverse environments such as tropical forests, grasslands and monocultures. Their shelters are in tree holes. They are threatened by locals (Chong et al. 2020). Philippine pangolin (*Manis*

culionensis) is endemic to Philippines and Palawan region. This species has already been hunted for 6000 years and indigenous people use them for medicine and ritual purposes (Schoppe et al. 2020). Representatives from Africa are: Black-bellied pangolin (*Phataginus tetradactyla*) which occupies forest regions of West and Central Africa. They are arboreal. This species is mainly threatened by habitat loss due to the rapid growth of the population of people and the demand for agricultural land (Gudehus et al. 2020). White-bellied pangolin (*Phataginus tricuspis*) occupies West and Central Africa in tropical lowland forests. These pangolins are semi-arboreal meaning that they spend time in the trees and on the land. They are threatened by smuggling into Asia (Jansen et al. 2020). Giant pangolin (*Smutsia gigantea*) habitats areas near the equator in Africa and it mainly lives in forests and they are solitary. They are threatened by locals and illegal trade into Asian countries (Hoffmann et al. 2020). The last representative of pangolins is Temminck's pangolin (*Smutsia temminckii*) mainly distributed in Southern and East Africa. It occupies arid areas and savannas with floodplains. They are solitary and they are active according to season. Main threats are electronic fences they accidentally hit and international illegal trade (Pietersen et al. 2020).

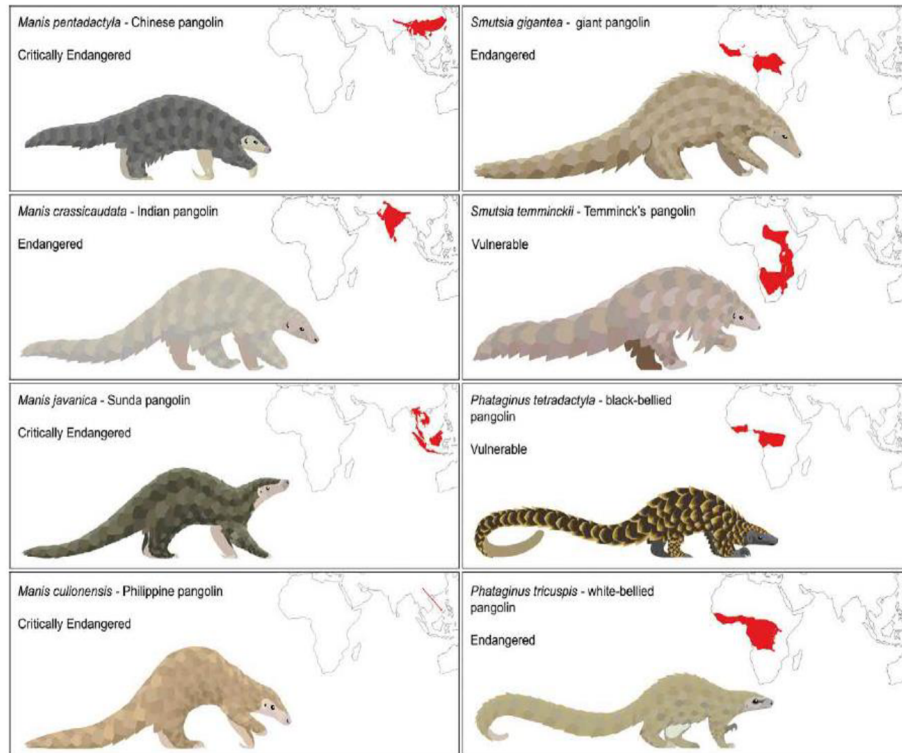


Figure 6. Eight species of pangolins divided according to area of living, Source (IUCN Red List and Sheila McCabe)

Due to high exploitation, pangolins were moved from CITES Appendix II into I and now are highly protected. Pangolins are not only used for traditional medicine where they are killed for their scales, but they are also hunted for meat. These days Asia is supplied by pangolins from Africa (Figure 7). Products from them are used in Asia because of the traditional mindset of people who believe these scales have a beneficial effect such as increasing of lactation in pregnant women and blood circulation. In Africa people believe that scales have beneficial effect on physical and psychological conditions (UNODC 2019).

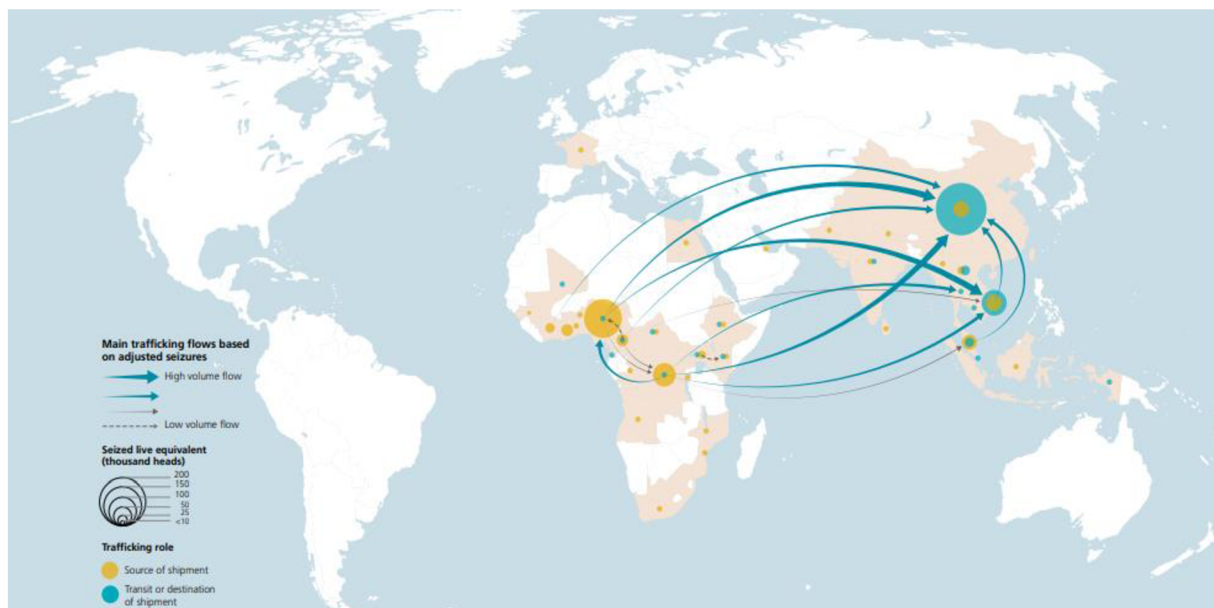


Figure 7. Trafficking flow map (Pangolins or scales from them in 2007-2018), Source (UNODC World WISE Database)

The following information is about tigers which are widely used in Traditional Chinese Medicine (TCM). The source of this information is known thanks to Mgr. Pavla Říhová who is an expert in wildlife crime and the knowledge is from her practice or cooperation with Interpol. Tiger is endangered because of the belief of local people that products from this animal are beneficial for health. Chinese people believe that every part of the tiger, even excrements, are good source for a healthy body. The most valuable are bones used against rheumatism. According to TCM the daily recommended dose is 3-6 grams per person. This data makes it easy to calculate how many grams a person needs per year (Říhová et al. 2022). In 2013 customs officers at Václav Havel Airport discovered the illegal export of tiger skeletons. The skeletons weight was about 12

kilograms (Miškovská 2013). The population of tigers is estimated at about 3,140 individuals (IUCN 2022). Theoretically it is possible to count how many people could be treated by this “medicine” because the population in China is about 1,4 billion (The World Bank 2022). This kind of treatment is not accessible for all people living in China.

Other animals threatened by TCM are bears, killed for their gallbladder. It is used to cure various illnesses such as gallstones, diabetes, high blood pressure or heart diseases (Jabin et al. 2019).

Nowadays rhinos are threatened by poaching and illegal trade. They are killed for their horns: In TCM it is believed that powder from rhino horns helps against fevers, nosebleed, or gout (Cheung et al. 2021). The highest demand is for the horns of Asian rhinos. However, they are not distributed as much these days. Meanwhile, African rhinos are mainly threatened by illegal poaching due to the high demand for horns. A cheap substitute are buffalo horns used in poor families. A high-quality substitute is the use of Saiga horns. Powder from Saigas is used against cramps, cures dizziness and headaches (Říhová et al. 2022). Finally, animals or products used from them is a sea horse, which was plentifully smuggled at Václav Havel Airport. Sea horses are killed, dried, and ground into a powder widely used against kidney disease, baldness, impotence, incontinence and is said to improve brain function in gerontic dementia (Říhová et al. 2022).

1.5.3. Trophy hunting or souvenirs

Hunting of animals has deep roots in human history. For humans it was necessary to kill animals so they could survive and be stronger. Prehistoric hunters used every part of killed animals. They processed and ate meat, made tools from bones to help them in their daily activities, and made decorations from teeth or bones. Nowadays killing animals remains an important human activity. It protects nature from overpopulation of certain species and stops spreading diseases that can decimate populations. Meat is an important component of our diet, it belongs to the food chain but should not affect the population of animals or directly threaten them. Unfortunately, game hunting persists as an entertainment (Allen et al. 2023). Hunting is a huge industry with a multi-billion turnovers. Worldwide there are about 45 million registered hunters from Europe and the United States (Říhová et al. 2022).

The most popular animal trophies are bears, buffaloes, lions, elephants and, leopards (Říhová et al. 2020). At Václav Havel Airport there were many seizures of ivory and other trophies or souvenirs (Figure 8).



Figure 8. Illegal export of 35.3 kilograms (14 pieces) of ivory to Vietnam, Source (Major Petr Vácha)

1.6. Controls at the airports worldwide

Passengers have to check-in where they get their boarding pass, then they go to the gates for the first control. At European airports automatic border control technologies are used more frequently. Those are expected to improve the security, continuity of the travelling process and movement of passengers (Oostveen et al. 2014). European countries are introducing biometric data, such as digital photographs and fingerprints. This system should help to meet the needs of airports resulting from the fast growth of passengers (Rio et al. 2015). After this process passengers can move into the terminal zones with security controls at the gates (Adacher & Flamini 2020, Figure 9).

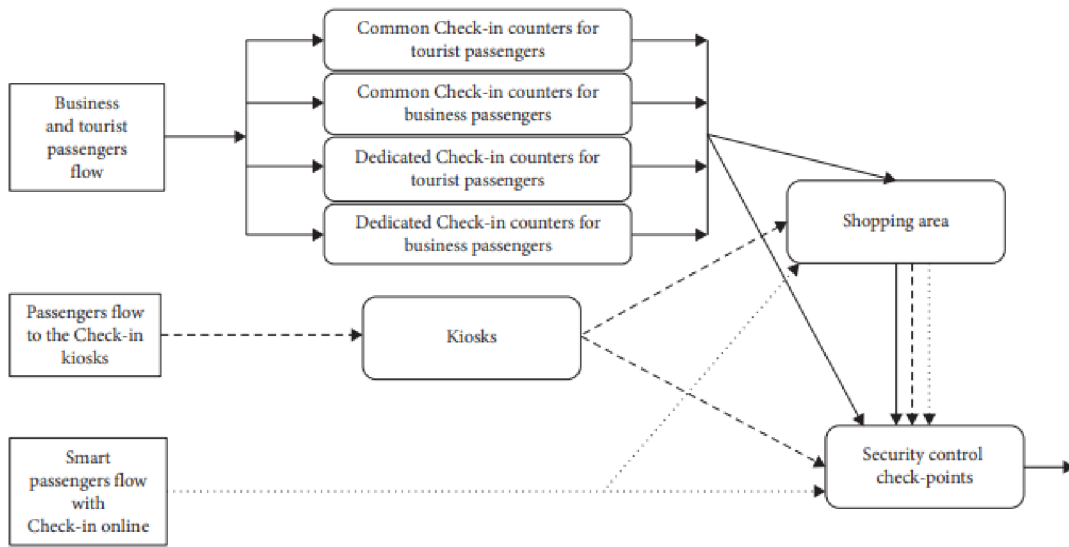


Figure 9. Schema of controls at airports, Source (Adacher and Flamini 2020)

Luggage and passenger controls are the most important at airports, in general. These controls are used as prevention of bringing dangerous objects that can be used as a threat on board of an aircraft. The security control consists of x-ray machines, metal detectors where passengers go through and physical checkups. Airport security also randomly test passengers if they are positive to drugs or gun powder residue (Skorupski & Uchroński 2016). After 11th of September airport controls worldwide became more thorough. A number of measures have been taken in the US and EU member states to ensure border security and migration control in the fight against international terrorism (Cinoglu & Altun 2013).

1.6.1. Possibilities of capturing objects at airports

X-rays are the most effective way to find prohibited objects that should not be in luggage. X-rays help to identify the content of the luggage. The critical reliance on human operators will persist for the rapid and reliable detection of various prohibited items in X-ray images (Schwaninger 2005). Not only X-rays but dogs can be used. Detection dogs are used at border controls or alternatively, during the examination of arriving passengers' luggage (Williams & Sharp 2021). Both alternatives must be in presence of a customs officer. The final method of identifying persons suspected of illegal activity is by receiving a tip.

1.7. Controls at Václav Havel Airport

All information is from customs officers, Civil Aviation Authority, major Milan Vašák and first lieutenant Josef Řepa.

1.7.1. Unauthorised items in luggage

There is a list of prohibited items in cabin luggage and checked-in luggage. Examples: firearms, weapons, tasers, sharp objects, working tools, explosives and incendiaries, ammunition, fireworks, and gun powder. Checked-in luggage can not come into a contact with the passenger before they reach their final destination.

1.7.2. Departure

There is a control of passenger and luggage. After arriving at Václav Havel Airport, passengers go to check-in their luggage and they get their boarding pass. Checked-in luggage go to grading room. Control of luggage is an automatic system. There are X-ray controls of luggage. X-ray screening can detect metal, explosives and radiation. If there is a suspicion, customs officers ask the passenger to assist opening the particular piece of luggage to be controlled.

After being checked-in, passengers go to passport control where their passport is checked by the police or automatic system easy gate. Passengers continue through duty free shops to the gates. There are security controls of passengers and their cabin luggage. At the airport there are random financial controls.

1.7.3. Arrival

After arrival, passengers go through passport control and proceed to the arrival hall to collect their luggage. Luggage is randomly controlled in a grading room and near the exit. There are two zones, green and red, where passengers clear the goods.

1.8. The most frequently illegally transported objects in the Czech Republic

According to the customs data the mainly illegally transported CITES objects at Václav Havel Airport are as it follows. Many species of cactuses; costus (*Saussurea costus*) which is listed as endangered due to high exploitation of its natural habitat and use for traditional medicine (Malhotra & Singh 2021). This plant is native to Himalayan region, where it grows from 2500 till 3500 metres above the sea level. It is commonly used to prevent some diseases (Butola & Samant 2006). It is listed in CITES Appendix I (CITES 2023).

Other transported plants or products from them are Golden Chicken Fern (*Cibotium barometz*) which grows in Asia, and it is used for traditional medicine, food components and fibre (Lim 2012). This plant is listed in CITES Appendix II (CITES 2023).

The last plant is *Cistanche deserticola* listed in CITES Appendix II (CITES 2023), used in traditional Chinese medicine, especially as treatment for insomnia (Lu 1998).

Moschus from Musk deer (*Moschus moschiferus*) which is killed for its musk production and is well-known for the production of perfumes, has the dominance of illegally transported objects of animal origin. These hornless animals inhabit mountains regions, and are easily recognized by their long teeth in males (Rafferty 2023). Musk deer is listed in CITES Appendix I and II according to area of habitat (CITES 2023).

Passengers frequently transport corals such as *Scleractinia* species. Other objects that were often transported, included creams and lotions from derivatives of protected animals, such as Saiga antelope (*Saiga tatarica*), listed in CITES Appendix II (CITES 2023). Saigas habitat regions in Russia, Kazakhstan and Mongolia, this animal is threatened by trophy hunting and Traditional Chinese Medicine (Lovari 2021).

1.9. The most frequently illegally transported objects worldwide

Rosen and Smith (2010) summarized that most illegally transported commodities were ivory, tiger skin and living reptiles. Most of the seizures were from Asia.

D’Cruze and Macdonald (2016) compared global trends in CITES live confiscations. There were 64,143 of confiscated animal individuals in 54 countries between 2010 and 2014. During this period, reptiles comprised 95% of confiscated individuals. Most individuals are listed in the IUCN Red List as threatened, and some of them are listed in the CITES.

A report from 2020 contained 180,000 seizures from 149 countries between 2014 and 2018. According to this report ivory and pangolins were the most frequently illegally transported commodities. Reptiles remained at a high rank of the list of illegally transported commodities. New trend is the transport of European eel (Zsigmond 2020). According to CITES data between 1977 and 2012 it was estimated that 576,303 individuals of Asian pangolins were internationally traded (Challender et al. 2015).

According to the CITES report from 2022, between 2016 and 2020, the most illegally transported items were flowering plants, corals, and the trend of transporting live reptiles continued. It was also found that in countries that signed the CITES convention, traditional Chinese medicine containing costus and moschus was widely intercepted (UNODC 2022).

2. Aims of the Thesis

This thesis aims to evaluate illegal international wildlife trade as reported by Czech customs from 2020 to 2023 specifically related to its composition, directions, and temporal dynamics, in order to inform people and society about wildlife conservation and spread awareness about CITES.

The first part contributes to understanding of the seizures of illegal transportation of wild fauna and flora, including living and non-living commodities at Václav Havel Airport including the way of transportation. Specifically, we focus on:

Description of the ratio of seized illegally transported fauna or flora. What dominates, is it fauna or flora?

Comparison of the ratio of capture rate of living and non-living animal or plant species. Which is seized more frequently? Is it the living animal/plant or the products made from them?

The second part deals with illegal wildlife trade directions, specifically: The ratio of exported and imported detected objects.

Which are the countries or continents with the highest rate of illegally transported objects?

What is the prevalent citizenship of individuals engaged in the transport of protected species?

How the different methods of detections of the CITES objects (X-ray screening, customs dogs or customs officers) are represented?

In the third part we focused on illegal wildlife trade dynamics, specifically on differences in capture rates among the years and during seasons.

Additionally, we evaluated the ratio of detected illegally transported and legally transported CITES objects or products, and lastly the importance of the airport size, which may influence the number of seizures of the illegally transported objects – ex.: Václav Havel Airport vs. other Czech airports.

3. Methods

3.1. Data collection

Data about transported commodities that were transported were obtained by the Czech customs administration from Václav Havel Airport. Customs officers obtained this data from inspections conducted at the cargo area, post office at Štěrboholy and the arrival hall, where the luggage was randomly checked or inspected based on tips. Data were from 1st January 2020 till 21st November 2023. The seizure data are recorded in an Excel sheet which describes the details of the seizures. It includes information about the country of origin, the desired final destination, the amount of transported objects, detailed description of objects, where the commodities were hidden and how they were discovered. It should be noted that all seizures detained at Václav Havel Airport must be consulted with CEI. However, it is uncertain whether all seizures were accurately determined. There could have been more a suspicious cases not classified as CITES violations, therefore we only analysed determined seizures. If it is known, the citizenship of suspicious passenger is mentioned. Furthermore, the Excel sheet reports whether the commodities were alive or non-living and finally, the customs department that captured the commodity is mentioned.

The seizures were transported and detected either in the passengers' luggage, in the airmail or in parcels (Figure 10). The explanation between different ways of transport are as follows: the seizures that were in luggage and the commodity was found in passenger's suitcase. Commodities detected in parcels arrived by post to the Štěrboholy office. Airmail came by regular airmail service to the airport and the commodity was found in the cargo.

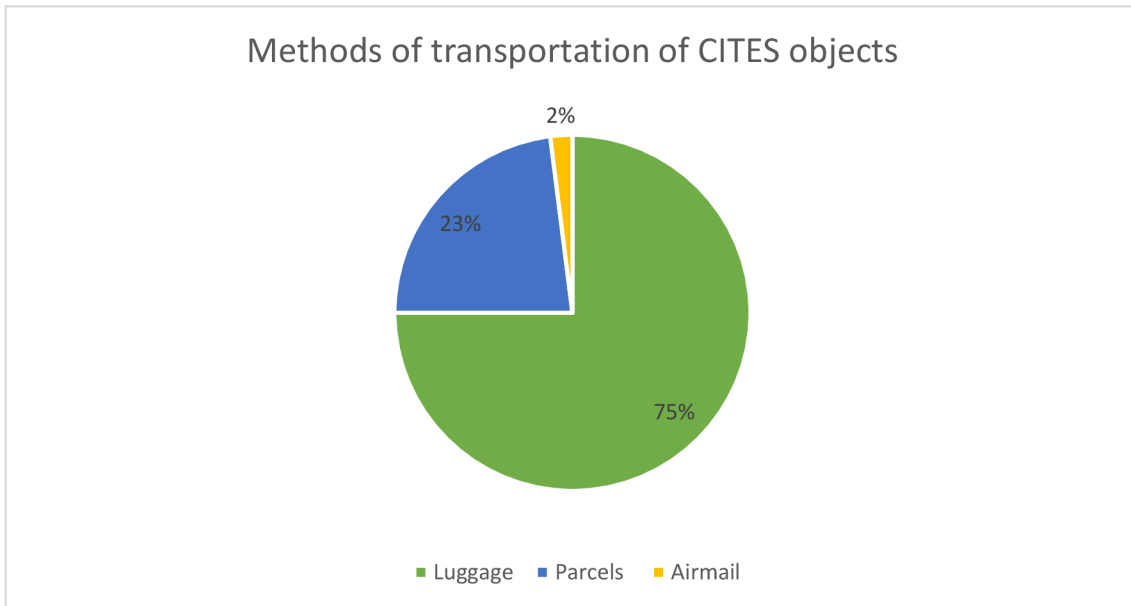


Figure 10. Methods of transportation of CITES objects in percentage, Source (Customs administration of the Czech Republic)

3.2. Data processing

The data were divided into more detailed categories in the Excel sheet. Highlighting some figures enabled me to work with the data and create detailed charts by adding some information I later used for the final statistics and results. The field with individual species was pooled into categories. First, they were divided into plant or animal categories, then a more specific category was assigned (e.g., cactuses and succulents, corals, reptiles, etc.).

3.3. Data analysis

The statistical programme Statistica (TIBCO Statistica 2020) was used for the analysis. The Pearson-Chi square test was used to analyze the relationship between selected categorical variables. Values below $p=0.05$ were considered significant. Specific relationships were evaluated with categorized histograms. All graphs were prepared in Excel.

4. Results

4.1. Composition of illegal wildlife trade

4.1.1. Ratio of fauna and flora

The total number of all captured CITES cases was 333. This number covers 205 (62%) cases of plant origin and 128 (38%) cases of animal origin.

The main transported plant subjects were many species of cactuses and costus. Another plant or product prohibited from transport was Golden Chicken Fern. Objects were most frequently transported in the luggage, resulting in 149 captures (73% of detected plant seizures) by customs officers. Passengers mostly transported some kind of medicine or pills which contained plant specimen.

Main captures via airmail were performed by customs officers. The record was a case of 4,310 pieces of costus which came to Prague from Hanoi. In another case, the officers confiscated 6,950 pills and sachets in a shipment of Golden Chicken fern heading from Hanoi to Prague. For another case, they discovered one Vietnamese citizen travelling from Hanoi to Dubai and Prague, who illegally transported 2,500 pills of costus.

This part describes the detection of illegally transported objects of animal origin. In one luggage the customs officers found living and many dead animals and products from them such as pills, cremes/lotions and even decorations made from skins, claws, teeth, and bones. Overall, moschus from Musk deer has the dominance of prohibited objects (45% of animal seizures).

There was also widespread transportation of corals (16% of animal seizures), whole or in fragments. All corals except one were found in passengers' luggage, one was sent by mail. In one case a parcel contained coral, *Scleractinia* species with the size about 28 cm.

Other objects were frequently seized, including creams and lotions from derivatives of protected animals, such as Saiga antelope. In lotions or glass bottles the customs officers also found rhinoceros horn extract, King cobra's poison, bear bile or even the entire Indochinese spitting cobra. Other frequently detected prohibited objects

were crocodile meat or skin, bears claws, killer whale teeth, wolf skin and dried sea horses.

Vietnam was the mostly represented country of departure, followed by African states, a few cases from America and other exotic areas such as Mauritius or Indonesia. The frequency of transported commodities differed in various continents ($\text{Chi}^2=705$, $\text{df}=125$, $p<0.05$). Medicine prevailed from Asian countries, corals from Asian touristic places and cactuses were mainly exported from Europe.

4.1.2. Ratio of captures of living and non-living animal or plant species

According to data from customs officers there were 289 cases (87%) of captured non-living objects. The remaining 44 cases (13%) contained living animal or plant species, such as cactuses mostly sent by mail and detained at the post office in Štěřboholý. As for the detection of illegal transport of animals, the objects of interest vary. For example, Checkered keelback (*Fowlea piscator*), or Saker falcon (*Falco cherrug*) were seized. The CITES export permit was issued for specimen different from those that were part of the shipment. Therefore, the goods were detained by the CEI. A huge case was performed on the 31st of May 2023, where 64 snakes, 5 turtles, and 4 geckos transported in a suitcase from Tel Aviv Israel were detained.

Pills, powders, or lotions that contained costus, moschus, and other plant or animal derivatives dominated the transport of non-living plants and animals. The frequency of non-living plants or animals was higher than living commodities ($\text{Chi}^2=7.18477$, $\text{df}=2$, $p=0.0275$). Therefore, the products made from animal and plant derivates were detected more frequently than living commodities (Table 1).

Table 1. Distribution of living and non-living animals and plants or derivatives from them, Source (Customs administration of the Czech Republic)

<i>Status</i>	<i>Animal/plant or derivatives from them</i>	<i>Number</i>
<i>Non-living</i>	<i>Derivate of plants</i>	<i>170</i>
<i>Non-living</i>	<i>Derivate of animals</i>	<i>119</i>
<i>Living</i>	<i>Plants</i>	<i>35</i>
<i>Living</i>	<i>Animals</i>	<i>9</i>

4.2. Directions of wildlife trade

4.2.1. Import export ratio and transit countries

According to the data collected at Václav Havel Airport, customs officers detected 296 imported CITES objects in comparison with 37 exportations. There were 194 direct flights to or from the Czech Republic, and 139 were with transit.

4.2.2. Countries with the highest illegal transport rate

The highest number of illegal transport interceptions were on the Vietnam – Prague lines, especially from Hanoi with the total of 180 (54% of all cases). The remaining interceptions were largely from Dubai and Istanbul. Several CITES items were found on arrivals from exotic countries such as Ethiopia, Mauritius, Malaysia, and Thailand. Also, from North and South America and even from countries such as Australia and Japan. These items arrived in the Czech Republic by mail.

The list of countries of origin of illegally transported objects captured in Prague is provided in Table 2.

Table 2. Countries with the highest rate of illegal transport between 2020 to 2023, Source (Customs administration of the Czech Republic)

<i>Country/countries</i>	<i>Number of cases</i>
<i>Vietnam</i>	<i>180</i>
<i>United Arab Emirates</i>	<i>41</i>
<i>Turkey</i>	<i>14</i>
<i>Quatar</i>	<i>7</i>
<i>United States of America</i>	<i>6</i>
<i>Russia</i>	<i>4</i>
<i>Mexico, Singapore, Korea, Australia</i>	<i>3</i>
<i>China, Israel, Thailand, Mauritius, Philippines, Japan</i>	<i>2</i>
<i>Brazil, Peru, Malaysia, Madagascar, Indonesia, Zanzibar and others</i>	<i>1</i>

4.2.3. Citizenship of individuals transporting prohibited items

During the four of observed years, there were 247 cases of detection illegally transported CITES items in the passenger luggage performed at the Prague Airport. The most frequently detected objects included pills and other medicines. Vietnamese citizens were most frequently detected to violate the CITES convention for the protection of endangered species of wild fauna or flora. From the total of 247 interceptions at the airport, Vietnamese citizens committed 194 (79%) cases of violating this agreement. They mainly transported pills and preparates made from moschus and costus and other plants. On the other hand, Czech citizens represented the majority importing corals (76%). The frequency of detection of medicine predominated in Vietnamese citizenship and detection of illegal transport of corals predominated in Czech citizenship ($\text{Chi}^2=1190.98$, $\text{df}=275$, $p<0.05$). In one seizure there was a dead Indochinese spitting cobra in a bottle of wine, and only one seizure contained living animals - two geckos.

4.2.4. Detection methods

Three methods are used at the Václav Havel Airport, X-ray scans, customs dogs and customs officers. X-ray scans are also located at the post office in Štěřboholý. Of the total of 333 seized cases, the X-ray machine detected the illegally transported CITES objects in 291 cases (88% of all cases). The remaining seizures were performed by dogs Blacky, Kuky, and Axel with a number of 18 seizures (5% of all cases), and the remaining 24 seizures (7% of all cases) were captured by customs officers (Figure 11). Detection dogs indicated more non-living commodities, such as skins or pieces of coral, with a total of 13 (72% of all cases). And living commodities such as cacti or snakes, with a total of 5 (28% of all cases).

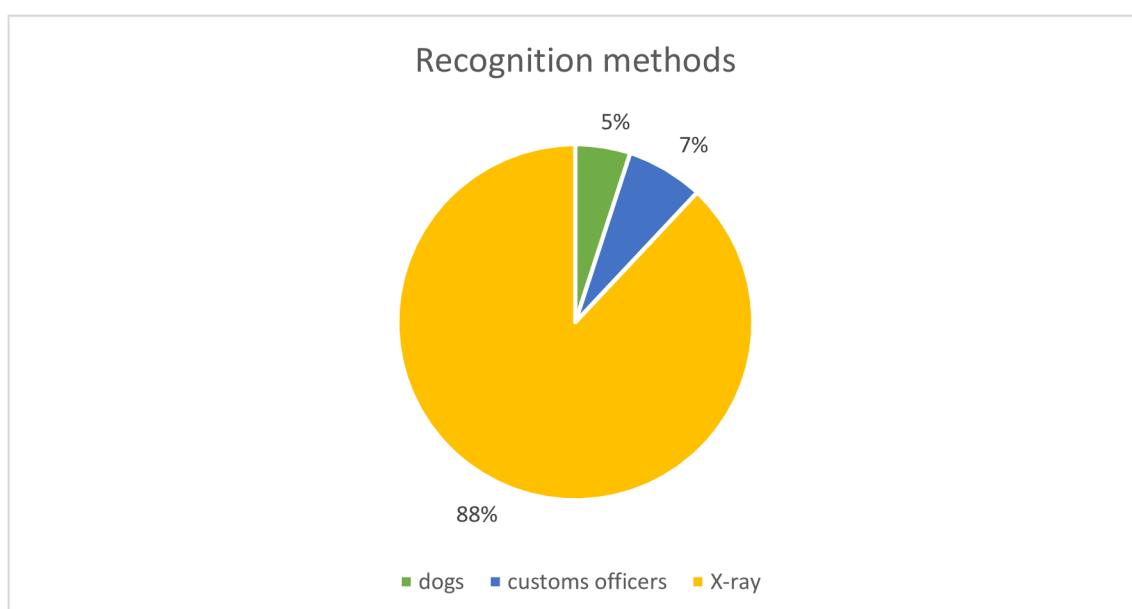


Figure 11. Recognition methods how were CITES objects captured in percentage, Source (Customs administration of the Czech Republic)

4.3. Temporal dynamics

4.3.1. Capture rates during seasons

Based on accessible data we can determine the number of seizures during the period of four years. There are no significant differences between the numbers of captures in individual months of different seasons. The exact number of seizures during the first

year of 2020 was 78, then only 59 in 2021, for the year 2022 there were 94 seizures and during the year 2023 there were 102 captures until 21st of November (Figure 12).

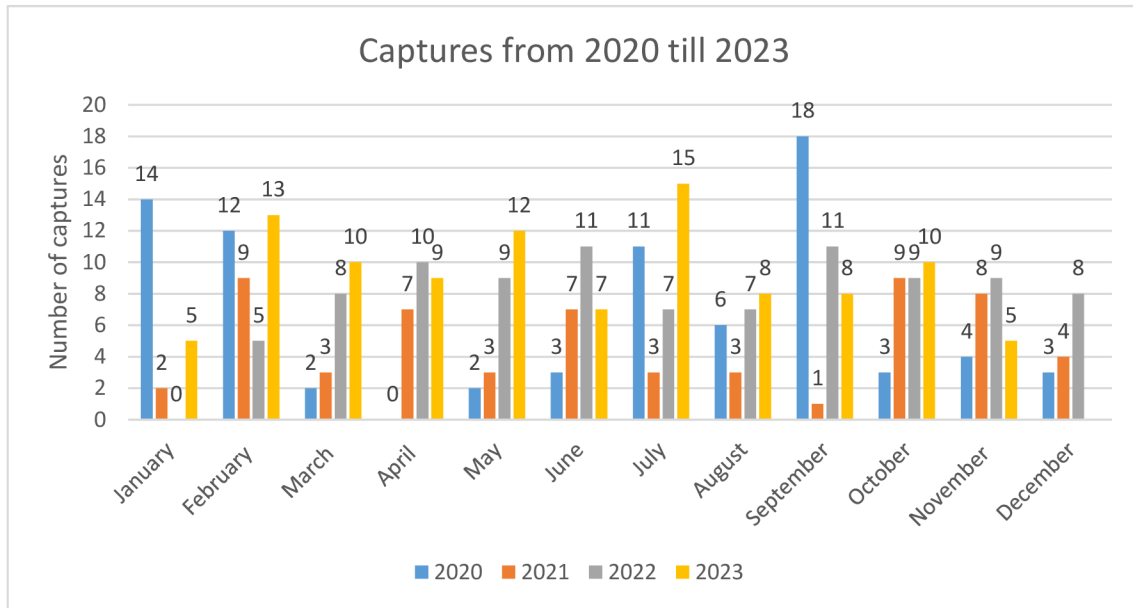


Figure 12. Display of all seizures during months between 2020 to 2023, Source (Customs administration of the Czech Republic)

4.3.2. Capture rates during years

In 2020, there was a noticeable trend of a significant volume of live cactuses being detected shipped via mail and airmail service. During the following year 2021 there were more captured pills and other medicines that contained protected plant or animal species.

During the years, it is noticeable that seizures of illegal imports of cactuses and succulents were primarily detected in 2020. The import of prohibited medicine dominated all years of observation, however, it was most prominent in 2022 and 2023 ($\text{Chi}^2=174.873$, $\text{df}=75$, $p<0.05$).

The year 2023 featured a mix of captures. Customs officers found corals, many lotions and pill with derivates from CITES protected animals and plants, living and non-living animals.

When comparing the means of illegal transport, the luggage predominated, except the year 2020 (COVID-19 pandemic) where parcels via regular postal service occurred in most of the seizures ($\text{Chi}^2=89.1851$, $\text{df}=6$, $p<0.05$).

The number of seizures leads to the number of handled tourists at the Václav Havel Airport (Table 3). It is obvious that during 2020, before the borders were closed due to the coronavirus. Air traffic was restricted, and people started using parcels and airmails to transport forbidden objects. The number of interceptions at the post and storehouses was 49 out of total 78.

Table 3. The number of handled tourists at Václav Havel Airport, Source (Václav Havel Airport 2023 and Statista 2024)

<i>Year</i>	<i>Number of handled passengers at Václav Havel Airport - In millions (approximately)</i>
<i>2020</i>	<i>3.6</i>
<i>2021</i>	<i>4.4</i>
<i>2022</i>	<i>10.7</i>
<i>2023</i>	<i>13.8</i>

4.3.3. The ratio of illegally and legally imported CITES items

The total number of seized illegally imported objects that violated the convention of protected animal and plant species was 296 cases. The number of seized illegally exported objects was 37 cases. Pursuant § 23b of Act No. 100/2004 Coll. has a seller or buyer to register the specimen or obliged to provide CITES import permit. During four years 789 permits were granted by the Czech customs administration. The highest number of permits was in 2022 with 233 permissions (Figure 13).



Figure 13. Permits for legal transportation of CITES objects, Source (Customs administration of the Czech Republic)

4.3.4. Size of airports and captured items – Václav Havel Airport versus other Czech airports

There was a significant difference in capture rates connected to different airports. At Václav Havel Airport there were 333 seizures from 2020 until 2023. According to customs data from Leoš Janáček Airport Ostrava, also known as Mošnov, it is possible to claim that during those six years (2018-2023) there were only 13 seizures performed. Eleven of those were captured in the passengers' luggage where mainly corals from exotic countries, such as Maldives, were transported. The two remaining seizures were detected in the cargo and the smuggled objects were plant products from cactuses, orchids, and trees. There were no CITES objects captured at other Czech airports.

Table 4. The number of handled tourists at Leoš Janáček Airport, Source (Ostrava Airport 2023)

<i>Year</i>	<i>Number of handled passengers at Leoš Janáček Airport – in thousands</i>
<i>2020</i>	<i>37,709</i>
<i>2021</i>	<i>137,558</i>
<i>2022</i>	<i>286,393</i>
<i>2023</i>	<i>342,932</i>

5. Discussion

According to results, the most frequently detected illegally transported commodities at Prague airport were cactuses and costus. Customs officers captured more cases with plant origin than those of animal origin. The expectation of dominance in illegal transporting of animals was disproved. Between the years 2010 and 2014, the illegal transportation of reptiles dominated in illegal wildlife seizures worldwide (D’Cruze & Macdonald 2016). In Germany, the illegal import of animals or their products was more prevalent (European Parliament 2016). On the other hand, in Switzerland, customs officers dealt with seizures of imported bushmeat, which people illegally transported for human consumption. It can thus be argued that illegal wildlife imports prevailed in Switzerland. Mainly, bushmeats of pangolins, primates, duikers and turtles were detected (Wood et al. 2014). According to an analysis of CITES report by all 184 involved countries, flowering plants dominated illegal trading between 2016 and 2020. Subsequently, corals, reptiles and mammals were the most illegally transported (UNODC 2022).

At Václav Havel Airport, mainly non-living commodities, such as medicines or pills made from plants such as costus or animals such as moschus, were detected. Other detected illegally traded non-living commodities included dried sea horses, leathers or products from crocodiles. In Germany shipments mainly consisted of ivory and reptile leather. Living commodities that were illegally transported included reptiles (European Parliament 2016). According to data from CITES signatory countries, the most prevalent illegal transportation included dead coral, plant-based medicines mainly from costus, leather products, ivory, animal-based medicines from moschus, meat and live reptiles (UNODC 2022).

In the Czech Republic, the highest number of illegal transports was detected from Vietnam. This result is confirmed by the CITES report, which notes that between 2016 and 2020, the highest volume of illegal imports into the Czech Republic originated from Vietnam (UNODC 2022). This trend persisted even between 2020 and 2023. The reason could be the minority of Vietnamese legally living in the Czech Republic (information according to the Ministry of Labor and Social Affairs 2023) and also cultural beliefs must also be taken into account. Interestingly, the main destinations for illegal imports are

primarily in Europe, with countries such as Germany, France, and the United Kingdom, and globally, New Zealand. The countries where the most exports originate include China, Australia, Oceania, and the USA (UNODC 2022). According to the European Parliament (2016) at Frankfurt Airport transit flights, 50% of shipments of CITES commodities went to China.

In the Czech Republic, the majority of seizures were detected in people's luggage. The situation is the same in Germany, where most seizures were detected in the passenger's luggage (European Parliament 2016).

At Václav Havel Airport, X-ray scanners were mainly responsible for the detections of illegally transported CITES items. These machines played a crucial role in the detection of illegally transported commodities. Furthermore, illegal commodity transportation was also detected thanks to detection dogs. Detection dogs are able to smell and detect elephant ivory, rhinoceros horns, corals, live reptiles, Traditional Chinese Medicine, fur, shells of turtles and roots of plants (WWF 2013). Czech detection dogs were able to detect fur, corals and live reptiles.

The collected data showed that there is no significant difference between seasons as expected. The only significant difference was among the individual years. The results suggest that illegal transport of CITES objects was likely influenced by COVID-19 pandemic. However, offenders found different ways to transport prohibited objects, such as cargo or airmail (European Parliament 2016).

During the year 2020 the COVID-19 pandemic influenced tourism worldwide, so at the Václav Havel Airport there were not so many captures of passengers. According to this fact it can be determined that during the years 2020 and 2021, there were fewer seizures. During the following two years, illegal transport increased rapidly. In the year 2022 the travel industry was restored and most captures were performed among passengers. In 2022, no illegal transport was detected at the post office, and only one case was detected in cargo (Czech customs 2023). Other EU countries were also affected by COVID-19 pandemic, the air traffic declined by more than 89% (Nižetič 2020). This problem is also confirmed by the report of contracting states, which confirms that during COVID-19, borders between states were closed at various times and transportation was greatly restricted. Globally, there were fewer seizures; however, this does not indicate that the demand for illegal specimens has decreased (UNODC 2022).

The last paragraph discusses the penalties imposed for violations of CITES. I thought there would be stricter penalties for violating the convention, both in terms of fines and imprisonment. However, I also believe that people are often poorly informed and lack sufficient knowledge of the laws. I recommend to establish boundaries to distinguish cases where individuals had only limited awareness or took the risk of transportation from deliberate violations of the convention.

When comparing sanctions for wildlife trade violations, the Czech Republic does not have fines as high as expected. Unfortunately, the situation is not better in other states. For example, in Singapore, the maximum fine amount is \$100,000 US for Appendix I violations, in Appendices II and III the fines are about \$50,000 US (National parks 2022). A better situation is in Great Britain with a punishment of seven years of imprisonment and unlimited fines (UK Government 2024).

6. Conclusions

Between the years 2020 and 2023 333 violations of the CITES agreement were revealed at Prague Airport. This agreement was primarily violated by passengers who transported prohibited commodities in their luggage. However, not only passengers' luggage is used for transporting CITES commodities. Other popular ways of transport are air cargo and mail, especially in 2020.

Mail was mostly used for transporting cactuses and succulents. Luggage mostly contained corals or traditional Chinese medicine. According to the results, we can claim that in today's Czech Republic, the most illegally imported commodity is traditional Chinese medicine, which contains parts of animals or plants.

It cannot be determined whether people intentionally transported the prohibited commodities or if it was simply due to lack of awareness and information.

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