African countries are primarily origin points.

Africa is a prominent source region for ivory, rhino horn, pangolin, marine species (abalone, European eels), and mammals (cheetah cubs, lion claws, etc.).

Specific countries (Kenya, South Africa, and Ethiopia) feature prominently as transit points due to their large international airports with varied flight routes and/or their geographic position closer to demand regions.

One country in particular, Kenya, has displayed a unique ability to seize trafficked wildlife in transit by relying in part on teams of sniffer dogs that reduce screening time while improving screening effectiveness.

Ivory seizures in air transport have slightly decreased by volume while rhino horn seizures have increased in number between 2016 and 2018.

Checked luggage trafficking instances may become more prominent over time (and air freight trafficking instances correspondingly less prominent) if wildlife product processing moves closer to origin regions, since seizure data suggests worked wildlife products are more likely to be transported by checked luggage or by passengers than raw ivory or rhino horn.
Those countries that appear prominently in the African heat map have generally either one or both of the following: significant remaining elephant, rhino, pangolin, mammal, bird, or reptile populations (South Africa, Mozambique, the DRC, Madagascar), or large international airports with many connecting flight routes to demand regions (Nigeria, Kenya, Ethiopia).

**Importance of land routes**

It is possible that some countries are underrepresented in the heat map because wildlife and wildlife products may be transported by land from one country to another to access airports that are perceived to be advantageous. For instance, it is possible that wildlife poached in Niger, Chad, or Cameroon is driven to one of Nigeria’s multiple international airports with connecting flights to Europe and East Africa. This tactic has been used before by traffickers driving products back and forth over the Kenya-Uganda border to evade higher levels of enforcement activity and awareness.

**Emergence of North Africa**

North African countries are not generally considered prominent countries for wildlife trafficking activity, particularly in comparison to their southern and eastern neighbors. But critically endangered European eels, which are seized increasingly frequently in European airports, are native to North African countries Algeria, Morocco, and Tunisia. Recent enforcement busts in Europe, particularly in Spain and Portugal, have revealed small-scale but well-organized trafficking networks shipping juvenile eels in the tens of thousands to Asian demand markets through prominent North African and European airports (see European Eel Trafficking).

Other North African trafficking instances either involved reptiles or were passing through North Africa on the way from West Africa to Europe or Asia.

Figure 2 displays the data within the Africa heat map in more detail. Prominent countries from the heat map are distributed by seizure count, highlighting those countries where enforcement efforts have been most effective.
Diverse types of wildlife seized

Enforcement officials in African airports have seized a wide array of wildlife and wildlife products over the past three years, although ivory and rhino horn seizures are most common. African biodiversity and the many different biomes present within the continent make Africa an unusually plentiful source region for traffickers targeting everything from elephants to lions, European eels, and abalone.

Prominence of Kenya and South Africa

Between 2016 and 2018, Kenya counted the most wildlife seizures of any African country according to the C4ADS Air Seizure Database. Kenya’s prominence is primarily due to two factors: Jomo Kenyatta Airport’s role as a major hub between flight routes originating in Africa and destined for the Middle East and Asia, and Kenyan enforcement’s awareness of the prevalence of wildlife trafficking activity in their airports. This likely leads to both the country’s high seizure count and the fairly diverse array of wildlife seized there (including ivory, rhino horn, pangolin scales, and various mammal products).

Although South Africa is a common origin point for ivory, rhino horn, and marine species trafficking, the country also plays a prominent role as a transit location for trafficking instances originating elsewhere in Southern Africa. South Africa’s OR Tambo Airport in Johannesburg counts dozens of connecting flights a day to the Middle East and Southeast Asia, providing traffickers in the region with a gateway to demand markets in other world regions. The airport’s geographic location and flight routes mean it often acts as a funnel for a significant amount of wildlife trafficking leaving Southern Africa.

Both Kenya and South Africa appear as two of the most prominent wildlife trafficking countries in Africa by seizure count, at least in part due to their role as countries with common transit airports. But customs and enforcement in most airports find identifying trafficked goods in transit difficult, if not impossible, given the short duration of most layovers. Most common transit countries, like Ethiopia, count comparatively few seizures in part because of this.

Seizure rates in Kenya and South Africa may have outpaced seizure rates in other common transit countries because Kenyan and South African officials, noting the high numbers of wildlife trafficking instances leaving their airports only to be seized elsewhere, have dedicated resources to screening passengers and cargo on departure and in transit. To address the difficulty of manually screening high volumes of passengers and shipments effectively and quickly, enforcement agencies in both countries have chosen to rely on sniffer dogs.¹ For instance, after a series of seizures in Asia arriving on flights from South Africa, South African authorities began “increased enforcement interventions on outbound flights at the cargo area of OR Tambo Airport” using sniffer dogs.² The strategy appears to be helping; in January 2019, a South African Revenue Service detector dog, Lizzy, discovered 36 rhino horn pieces hidden under “laminated wooden sheets in four boxes…filled with doormats and decorative items.”³

Only trafficking instances for which flight route information exists were included. The data is split by country, rather than airport, to account for transit information reported at the country level.

**Seizures in transit**

Only four African countries appear to make many seizures in transit: South Africa, Kenya, Ethiopia, and South Sudan. Both South Africa and Kenya experience high levels of trafficking activity, and have adapted to counteract the exploitation of their airports by wildlife traffickers through the use of sniffer dogs and other enforcement strategies. Ethiopia and South Sudan’s seizures, however, are less expected.

Ethiopia, with the second-highest number of transit instances in Africa, exhibits seizure numbers that clearly reflect its status as a transit country, with Ethiopian authorities stopping only three of the 32 known trafficking instances that passed through its airports (a 9% success rate). But South Sudan has a comparatively high seizure count, especially given limited resources in the country. For example, after sniffer dogs discovered 500 kg of ivory in Juba Airport in 2016, Khamis Adieng of South Sudan’s National Wildlife Service said, “We have no modern technology…and that is why it has become easy for [smugglers] to pass through South Sudan.” Adieng’s comment suggests that wildlife traffickers smuggle animals and products through South Sudan frequently without being seized, creating the appearance of only low levels of trafficking where really trafficking is prevalent and successful.

Figure 4 emphasizes the importance of African airports as origin points for trafficked wildlife and wildlife products given the continent’s diverse array of species. Only three countries – Kenya, Ethiopia, and South Sudan – are not predominantly origin countries.

**Difficulty of making seizures at origin**

Customs authorities, the agencies usually charged with intercepting wildlife, generally do not conduct screening on departure. As a result, most origin countries miss the majority of trafficking activity leaving their airports. Figures 4 and 5 reveal this phenomenon in abundance in Africa, where most countries act as origin points for wildlife trafficking and simultaneously do not stop the majority of trafficking instances leaving by air.

Countries like South Africa, Mozambique, and Madagascar appear to be comparatively more adept at discovering wildlife trafficking instances before they depart. These countries’ higher seizure numbers are likely driven by higher levels of trafficking activity and higher levels of wildlife trafficking awareness amongst officials. Each of the three countries is known to struggle with ongoing poaching activity within their borders (primarily rhino poaching in South Africa and Mozambique, and reptile poaching in Madagascar).

**FIGURE 4**

Country-level flight route information for African countries with five or more trafficking instances (2016–2018).

**FIGURE 5**

Point of seizure within the supply chain by African country (2016–2018).
As air passenger and cargo volumes increase, customs and enforcement authorities will have to expedite screening processes while at the same time improving screening effectiveness. Over the past several years, officials in an increasingly large number of airports have relied on sniffer dogs to help screen passengers, checked luggage, and air freight shipments quickly and effectively.

Dogs can be trained to detect everything from cancer to bed bugs, currency, and invasive species, and have been used by enforcement authorities to identify explosives and drugs since at least the mid-1900s. But it was only in the 2000s that enforcement began to train dogs to detect wildlife at border crossings and other ports of entry. Two of the first countries to rely on wildlife sniffer dogs (also called detector dogs), Germany and Kenya, trained their first sniffer dog teams in 2008 and 2009 respectively. Since then, authorities have consistently made wildlife seizures based on sniffer dog detections, in one instance making four ivory seizures in one week in Jomo Kenyatta Airport. After the seizures, Mark Kinyua of KWS noted, “It speaks volumes if you can arrest people like that consecutively. It is a huge deterrent.”

Still, the successes of sniffer dogs speak for themselves. As Birgit Braun with WWF told Germany’s Deutsche Welle, “A dog’s nose is more effective than any technical equipment they have at the airport.” As global reliance on air transport continues to increase, training sniffer dogs to detect wildlife and other contraband will be one of the most effective strategies available to enforcement to expedite and improve screening in airports around the world.
Three countries had multiple airports with two or more wildlife seizures between 2016 and 2018: Mozambique (Maputo Airport and Beira Airport), Nigeria (Murtala Muhammed Airport and Mohamed V Airport), and Cameroon (Douala Airport and Yaounde Nsimalen Airport).

Seizures in transit countries are most diverse

Enforcement officials in African airports made a wide variety of wildlife and wildlife product seizures between 2016 and 2018. Airports with the most diverse set of seizures tended to be the primary international airport in a prominent transit country (e.g. Kenya’s Jomo Kenyatta Airport, South Africa’s OR Tambo Airport, and Uganda’s Entebbe Airport).

High seizure numbers at certain origin airports

Despite the difficulties inherent in confiscating trafficked wildlife and wildlife products on departure, authorities in common origin points Maputo Airport, Mozambique; Ivato Airport, Madagascar; and N’Djili Airport, DRC made a high number of wildlife seizures. Reports of seizures in all three airports gave few indications as to what might be driving their unusually high seizure counts – the method authorities used to detect the seized wildlife varied significantly from x-ray, to suspicious behavior, to “discovered during check-in.” The absence of a particularly effective or coordinated identification strategy suggests that these high seizure counts may be reflecting high levels of trafficking activity emanating from these countries.

Seizures tend to cluster in certain areas

Seizures of different types of wildlife tended to occur along established supply chains for each species. Rhino horn seizures, for instance, occurred exclusively in Southern Africa (OR Tambo Airport, Maputo Airport, and Beira Airport) where rhino populations still exist in significant numbers, and in common transit airports for rhino horn trafficking instances moving from Africa to Asia (Jomo Kenyatta Airport and Entebbe Airport).

Similarly, airports in exclusively origin countries (i.e. countries that are rarely or never used as transit points) seized only wildlife native to their country. For example, Ivato Airport in Madagascar, a country well-known for its unique reptile species, made only reptile seizures.
Figure 7. African air trafficking routes recorded in the C4ADS Air Seizure Database (2016 – 2018)

Circle size indicates the number of flights carrying illicit wildlife that departed from or arrived at a particular city. Capital cities are used when specific airports are unavailable.
The routes maps for African air trafficking routes indicate consistently high seizure levels in Africa between 2016 and 2018, although seizures in 2018 appear fewer than in the previous two years, with only 106 trafficking instances counted in the C4ADS Air Seizure Database in 2018 compared to 145 and 157 in 2016 and 2017 respectively. The routes maps further reveal that Asia is the primary destination region for most wildlife and wildlife products leaving Africa, although some species – particularly reptile species – are often destined for Europe.

**Ivory trafficking cedes to rhino horn trafficking**

In 2016, ivory trafficking flight routes appeared prominently throughout most of Africa, generally passing through East Africa and the Middle East on the way to East Asia. Over the next two years, ivory flight routes seemed to diminish, and other categories of wildlife trafficking became more prominent. At the same time, rhino horn flight routes appeared to increase in 2017, with one direct flight between Johannesburg and Hong Kong exhibiting especially high levels of rhino horn trafficking activity. By 2018, both ivory and rhino horn trafficking activity seemed to have decreased slightly, although common flight routes for both remained (e.g. Johannesburg → Hong Kong and Johannesburg → Doha → China for rhino horn, and various African countries → Addis Ababa → China for ivory).

**Importance of transit hubs**

Europe, the Middle East, and East Africa all emerged as clear transit regions for wildlife trafficking instances leaving Africa. Within each area, certain airports stood out as particularly important, such as Jomo Kenyatta Airport in Kenya, Bole Airport in Ethiopia, Dubai Airport in the UAE, Doha Airport in Qatar, Charles de Gaulle Airport in France, and Istanbul Ataturk Airport in Turkey. Each of these airports was used consistently by traffickers of different types of wildlife and wildlife products.

But some common transit hubs visible in the Africa routes map were used more frequently by specific types of wildlife traffickers. For instance, smuggled reptiles leaving Madagascar almost always flew through either Jomo Kenyatta Airport in Kenya, Sir Seewoosagur Ramgoolam Airport in Mauritius, or Roland Garros Airport on Reu- nieon Island on the way to Southeast and East Asia. Similarly, OR Tambo Airport was clearly a key transit hub for rhino horn leaving other Southern African countries such as Namibia, Mozambique, Eswatini, and Zambia and destined for China.

**FIGURE 8**

![Figure 8: Transport methods for African trafficking instances in the air transport sector (2016 – 2018)](image)

More wildlife trafficking instances moving through Africa were transported by checked luggage (47%) than by any other transport method.\(^1\) Ivory and pangolin, however, were more likely to be smuggled by air freight, and together made up 48% of African air freight instances in the C4ADS Air Seizure Database.

**Prevalence of air freight**

Wildlife traffickers in Africa, Asia, and the Middle East were more likely to smuggle contraband in air freight than traffickers in the Americas, Europe, or Oceania. This was likely driven by ivory and pangolin scale supply chains, both of which generally originate in Africa and pass through the Middle East on the way to Asia. Other African species and wildlife products trafficked in air freight between 2016 and 2018 included rhino horn, dried seahorses, and abalone, all of which occasionally followed the same routes as ivory and pangolin scales through the Middle East and into Asia.

\(^1\)See previous reports Flying Under the Radar (2017) and In Plane Sight (2018) for more detailed information on trafficking methods used for different types of wildlife. Trafficking methods used for ivory, rhino horn, reptiles, pangolins, and mammals are all relevant to wildlife trafficking by air in Africa.
Wildlife product processing increasingly occurs in source regions

Over the past few years, seizures and other enforcement actions in Africa have indicated that wildlife product processing is increasingly occurring in source or origin countries, rather than near demand markets. This phenomenon is likely driven by the challenges inherent in trafficking raw materials over long distances; raw ivory and raw rhino horn, for instance, are much larger and more unwieldy than worked ivory and rhino horn products. Trafficking networks may believe that processing ivory and rhino horns in Africa and shipping final or near-final products to demand markets helps them evade detection, since worked wildlife products are easier to carry, often difficult to identify as wildlife derivatives, and can be used to argue that traffickers are merely tourists, unaware of wildlife trafficking regulations.

Because processing seems to be moving closer to source and origin regions in Africa, air freight trafficking instances may fall, as fewer raw ivory shipments leave African airports for Asian destinations. Simultaneously, checked luggage and passenger trafficking instances may rise as worked ivory and processed rhino horn pieces or powder are increasingly moved instead. This is already visible in ivory seizure data in the C4ADS Air Seizure Database, which shows a marked increase in worked ivory seizures in airports over the past couple of years. For example, worked ivory was found in 28% of ivory air instances in C4ADS’s data in 2016, 54% in 2017, and 78% in 2018.

Few trafficking instances moved in passenger clothing or carry-on bags

Of all the world regions covered in this report, Africa had proportionally the fewest trafficking instances carried by passengers in their carry-on bags or on their bodies (11%), with the exception of Oceana, which counted none. If wildlife product processing continues to shift to source regions in Africa, however, seizures of worked wildlife products carried by passengers may increase.

“...wildlife product processing is increasingly occurring in source or origin countries, rather than near demand markets.”

Image 4. 2.04 kg of painted rhino horn pieces discovered inside the pockets and interlining of a passenger’s jacket, as well as hidden in a pair of socks in his check-in bag in Hong Kong Airport. Source: Hong Kong Customs
Over the past few years, known European eel trafficking instances appear to have spiked. Of the 21 European eel seizures in the C4ADS Air Seizure Database between 2016 and 2018, 5% occurred in 2016, 25% occurred in 2017, and 70% occurred in 2018. This is particularly concerning given that European eels are both endangered and generally trafficked in large quantities. In 2018 alone, C4ADS identified 14 seizures totaling around 3,757,000 eels.\textsuperscript{xxi}

Many of these European eel seizures exhibited similar characteristics, such as:

- Originated in Europe or Northern Africa, usually Spain, Portugal, or Morocco
- Destined for China or Vietnam
- Packed alive in plastic bags filled with water
- Transported in several specially adapted checked bags
- Transported in air freight and misdeclared as another marine species (e.g., prawns, chilled fish, octopuses)
- Involved tens or hundreds of thousands of eels
- Seized in Europe or Northern Africa

For example, in February 2018, Spanish Civil Guard agents discovered 250 kg of European eels in a shipment declared as barnacles in the air freight terminal of Madrid-Barajas Airport.\textsuperscript{xxii} The eels had been packed in several white Styrofoam boxes filled with water and ice in order to keep the eels alive until they reached their destination in Vietnam.

The consistent use of the same trafficking methods across different European eel seizures, as well as the sheer size of each trafficking attempt, suggest that European eel trafficking networks are well-organized and relatively professional. Investigations following several recent seizures have supported this indication and exposed the operations of small criminal groups specializing in European eel trafficking. For instance, in April 2018, the Spanish Civil Guard, the Portuguese Food and Economic Security Authority (ASAE), and Europol conducted a joint enforcement operation into one of these groups. During the operation, the officials coordinated the arrest of a group of ten Chinese, Spanish, and Moroccan nationals who had been trafficking European glass eels since at least 2016.\textsuperscript{xxiv} The network would fish for eels in northern Spain and then transfer the eels by truck to Algeciras, a Spanish city near the Strait of Gibraltar. The eels were then transported to Morocco where they would be flown to China, Hong Kong, or South Korea. The group also occasionally exported eels through Pato and Lisbon Airports.

Reports indicate that this modus operandi is common amongst eel trafficking groups:

“The live eels are largely caught...in Western Europe before being smuggled eastwards in vans or lorries, often falsely labeled as nonendangered fish... Criminal gangs then divide the eels into suitcases, up to 50,000 of the tiny fish per bag, which are then flown by commercial airliner to Asia. The fish are grown in special farms to their full size...and then sold to market.”\textsuperscript{xxv}

All of these patterns seem to have continued into 2019. Between January and March of 2019, European officials had already made at least another eight European eel seizures, seven of which had been discovered in checked bags. Several of the seizures exhibited signs of organized, semi-professional trafficking activity.

For example, on February 6, Croatian officials in Zagreb Airport stopped two passengers, Chinese citizen Yeongjin Kim and Korean citizen Myeonghag Shin, with 252,000 European eels in plastic bags filled with water and ice in eight suitcases on their way to Moscow.\textsuperscript{xxvi} xxvi Airport officials had discovered the hidden eels after
X-rays revealed what looked like “big balloons” in the bags, each of which had been lined with thermal padding to keep the eels at a steady temperature. At the time of the seizure, Tihomir Zegrec, the head of Zagreb Airport’s Border Customs Office, stated, “[The suspects] arrived in Zagreb a few days ago and their arrival was not unnoticed. They were in Croatia for a couple of days and then with their cargo they headed back to Moscow… The case has some elements of organized crime.”

A subsequent investigation revealed that the suspects had already successfully delivered a shipment of European eels to their “employers” on January 24. During their later sentencing hearing, Croatian police explained that Kim and Shin had been hired by a “Mr. Han” (later identified as Chinese national Yongnan Han) to smuggle European eels from Zagreb to Southeast Asia. Han had greeted both suspects on their arrival in Zagreb and paid for both their flights and lodging expenses at two hotels. Han and his associate, Hanwool Jang, fled Croatia after the seizure.

Another 2019 seizure suggested that some European eel traffickers may have prior experience transporting fish. On January 28, customs officials in Stuttgart Airport stopped two men on their way to Asia with 170,000 European eels packed in 48 bags within four separate suitcases. Officials noted that the traffickers had added pure oxygen to each bag to increase the chances the eels would survive the journey. The Fisheries Commission “estimate[d] that a specialist in fish transport [was involved], because this is exactly how fish in commercial fisheries are transported.”

The January 28 seizure was particularly notable because it was reportedly the first seizure of European eels in Stuttgart Airport. Reports of the seizure noted that although customs officials in Stuttgart had not dealt with European eel trafficking before, they were familiar with the “characteristics of eel smuggling” because eel seizures have become common in other European cities such as Frankfurt and Zurich. A German official quoted at the time of the seizure suggested that higher seizure rates in Western Europe were pushing eel trafficking attempts further east towards Eastern Europe, “where eel smuggling is so far not that well-known and the detection rate is still relatively low.”

These seizures and associated arrests suggest that European eel trafficking is increasing, and tends to involve experienced, small-scale trafficking networks using European and North African airports to move eels to demand markets. As awareness of European eel trafficking continues to increase in European and North African airports, officials can expect to see a shift towards airports that are smaller or farther afield as traffickers attempt to bypass heightened scrutiny on high-risk flight routes.
Endnotes


iii. Ibid.


vii. Although it is unclear when exactly the Kenya Wildlife Service began relying on sniffer dogs, publicly reported seizures resulting from sniffer dog identifications in Jomo Kenyatta Airport seem to have begun in 2009.


xvii. An estimate of 3,000 eels per kg was used for seizures that were reported only by weight. Source: Bryce, Emma. “Illegal eel: black market continues to taint Europe’s eel fishery.” The Guardian. 9 Feb. 2016. www.theguardian.com/environment/world-on-a-plate/2016/feb/09/illegal-eel-black-market-continues-to-taint-europes-eel-fishery.


xx. Roughly 951,000 eels.


xxii. About 150,000 eels.


xxviii. Ibid.

xxix. Ibid.


xxxi. Ibid.

xxxii. Ibid.

xxxiii. Ibid.