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# How is International Orchid Trade Regulated, and how Effective are those Regulations?

By Madeline Roubik

## Introduction

When investigating the trafficking of wild species, animals are often considered before plants (Phelps et al. 2015). This is especially detrimental to members of the orchidaceae family, which are victims of an extensive illegal trade. It spans the entire globe but is especially concentrated in Southeastern Asia (Phelps et al. 2015). When regarding legislation, however, orchidaceae species are some of the most protected in the world. International legislation such as CITES restricts the movement of endangered orchidaceae across borders (Hinsley 2018). The 1992 Convention on Biodiversity (Lawson et al. 2019) also has policies regarding international orchid trade. National laws regulate trade as well, with the United States (Hinsley 2018), India (Hinsley 2018), and Mexico (Flores-Palacios et al. 2007) all regulating orchidaceae movement across borders. Despite these restrictions, illegal trade persists in high numbers (Flores-Palacios et al. 2007; Hinsley 2018). To combat this black market for orchids, many experts recommend market monitoring, increasing legal trade, and increasing research on orchids (Liu et al. 2020; Flores-Palacios et al. 2007; Hinsley 2018). This research paper aims to identify why species in the Orchidaceae family are so heavily trafficked, how their trade is regulated, and how effective those regulations are. In addition, it will explore alternatives to our current conservation efforts and propose solutions to the vast illegal trade Orchidaceae are facing.

## Orchid Morphology

Before discussing the importance of orchid conservation, it is important to understand what defines an orchid. As of 2018, there are 29,199 accepted orchid species (Hinsley 2018) and 850-1,000 accepted genera (Lawson et al. 2019). All orchids are part of the *Orchidaceae* family, which belongs to the kingdom Plantae (IUCN 2024). Orchidaceae is the oldest known flowering plant family in the world. They notably have three petals, three sepals, one column, and one labellum. Their flowers are also symmetrical (All About Orchid 2024). Orchids can be found on

every continent except for Antarctica (Lawson et al. 2019), which allows the family to fill a variety of unique niches. For example, in the African Fynbos biome, orchids need regular fire and minor physical disturbances to survive (Kraaij et al. 2017). In contrast, the epiphytic orchids of Mexico rely on mutualistic relationships with trees (Flores-Palacios et al. 2007). The majority of orchid diversity can be found in the tropics and Southeastern Asia, a hotspot for orchid diversity. (Vitt et al. 2023).

## Extent of Legal Trade

Due to the orchids' high variability and beauty, strong cultural connections and uses developed. Most orchids are traded for horticultural values (Phelps et al. 2015; Hinsley 2018; Subedi et al. 2013; Gale et al. 2019), medicinal products (Subedi et al. 2013), and food (Hinsley 2018; Gale et al. 2019). They also play a large role in cosmetic production (Orchid Market Analysis 2021). However, orchids have a low harvest tolerance which can cause decreases in a species' population if too many individuals are collected (Hinsley 2018). This wild harvest contributes to the decline of about one-third of threatened Orchidaceae species (IUCN Red List 2024), which is why the majority of legal trade is propagated specimens.

In 2020, the global orchid market was estimated to be worth \$5,152.1 million, and it is expected to reach \$7,051.3 million by the year 2027. North America makes up the majority of this market, with \$1,617.3 million in orchid trade (Orchid Market Analysis 2021). This number is expected to increase, as interest in cosmetics, herbal medicines, and medicinal uses also increase. The largest share of the global orchid trade is cosmetics, which was worth \$1,598 million in 2020 (Orchid Market Analysis 2021). Thailand is the top exporter as of 2022, while Japan and the United States are the top importers. (Orchids 2022)

## International Regulations

Because orchids play a major role in many cultural and economic activities, preserving them is a shared interest worldwide. Many orchids occur at low densities and inhabit extremely niche habitats. As wild-collected orchids are often sold on the commercial scale, this poses a significant threat to species' survival. (Hinsley et al. 2018) This risk of extinction has led to international legislation regulating the trade of orchidaceae.

## CITES

One of the most notable international regulations on wildlife trade is the *Convention on International Trade in Endangered Species* or CITES. CITES creates regulations for threatened species regarding transport between independent states. This is done through the identification of threatened species, issuing permits for safe harvesting/propagating of species, and monitoring ports of entry for contraband. CITES recognizes 34,000 different species of orchidaceae as protected, making over 70% of CITES-protected species orchids (Phelps et al. 2015; Hinsley 2018).

CITES divides protections into three separate categories (called Appendixes) based on the individual species' threats and risk of extinction. Under Appendix II of CITES, where all but 9 species of orchidaceae are listed (Gale et al. 2019), species are allowed to be internationally traded with restrictions (CITES 2024). These wild-collected orchids must have an exporter re-export permit from the Management Authority of the State of export. They must be legally obtained, their export cannot be detrimental to the survival of the species, and their shipment must not cause injury or poor health to the specimen (CITES 2024).

For the 9 species and genera listed under Appendix I of CITES, permitting is much stricter. Almost all international trade is banned with a few rare exceptions (CITES 2024). CITES laws apply almost exclusively to wild-collected specimens, as artificially propagated orchids and seedling or tissue samples from artificially propagated orchids are exempt. However, these must be properly labeled, professionally processed, in good health, and carry documentation of the number of plants shipped (CITES 2024).

For an orchid grower to transport their plants internationally, they must obtain a permit and be listed in the CITES Register of Approved Plant Nurseries. This can be done by submitting documentation to the management authority of each state. They must provide the name and address of the nursery owner, the facilities description, Appendix I taxa currently in production, and other data. After the management authority receives an application, the CITES Secretariat is notified. The Secretariat ensures that the nursery will not deplete wild stock of orchids by harvesting a parental stock, and is responsible for reviewing the nursery for compliance. The Secretariat either accepts or rejects the application, and then lists approved nurseries in the CITES Register (CITES resolution).

## 1992 Convention on Biodiversity

Another convention, called the 1992 Convention on Biodiversity (CBD), addresses conservation and sustainable use of biodiversity (Lawson et al. 2019). This convention was signed by the majority of UN states and contains the Nagoya Protocol (Unit 2024). The Nagoya Protocol provides the legal framework for the CBD to regulate equitable and fair access to genetic resources. Although it primarily focuses on the distribution of resources, it also has some legality with the export of species. This is evident through their permitting system. According to Article 6 of the Nagoya Protocol, the Party (usually the State in which genetic resources are located) must give prior consent to any outside party that aims to harvest, use, or sell said resource. The Party must create rules and procedures for accessing the resource, provide information on applying for informed consent, and provide a permit that is evidence of prior consent and details agreed-upon terms (Nagoya Protocol. Article 6 2014). These issued permits, once made available to the Access and Benefit-Sharing Clearing-house, become internationally recognized certificates of compliance. (Nagoya Protocol. Article 17 2014)

The Party is also responsible for the monitoring and transparency of the utilization of genetic resources. This is done through several different measures, including designating checkpoints to monitor compliance, encouraging users of the resource to agree to reporting requirements, and using cost-effective communication tools (Nagoya Protocol. Article 17 2014).

For example, if China were to harvest orchidaceae species in Thailand (both of whom are parties recognized by the Nagoya Protocol) Thailand would need to issue permits and monitor the harvesting efforts. These permits may then be used as proof of consent when moving the orchids across international borders. (Nagoya Protocol. Parties 2014)

## WTO Sanitary and Phytosanitary Measures

The last major international legislation regarding orchid trade is the 1994 World Trade Organization's Sanitary and Phytosanitary Measures (SPS) (Lawson et al. 2019). Although these measures are not intended to aid in conservation, they are intended to regulate imported, consumable material.

There are no baseline rules to SPS, as the agreement allows members to set their own regulations for animal/plant health and food safety. However, these regulations must be based on science and cannot arbitrarily restrict trade. Members are encouraged to use international

guidelines and standards when addressing what can and cannot be imported, although higher restrictions are allowed if there is enough scientific basis. Different methods of control, inspection, and approval procedures are used to verify compliance (World Trade Organization 1995).

Because many orchids are considered consumables, their import is restricted under SPS (World Trade Organization, 2024). This may include inspection of imported orchids, restricting additives, establishing contaminant limits, and restrictions on orchids coming from pest/disease-infected areas (SPS 1995).

## National Regulations

Although international regulations regarding orchid harvesting are abundant, many countries have their own legislation. These operate on a national level and aim to conserve threatened orchidaceae species. Many of these regulations operate by restricting the harvesting of specimens and their transport across borders. Several examples are listed below.

### United States of America

The United States has many national and state-level legislation that restrict orchid trade. One of the most notable is the Lacey Act, which is used to enforce CITES. The Lacey Act prohibits the illegal import of wild plants into the United States (Hinsley 2018). It applies to all CITES-listed species, which makes all orchidaceae subject to it. All importers must file a declaration of entry that contains the name and quantity of the plant, the value of the import, and where the plant came from (Lacey Act 2024).

The United States also regulates orchid collection within the country. All harvest of flora on federal lands is banned, while fifteen endangered orchid species are banned from harvest entirely. Several US states also restrict orchid trade and transport. One example is Florida, which restricts all harvest of flora on state lands (Hinsley 2018).

### Additional States

The Mexican government has made many efforts to preserve their native flora. In addition to signing CITES in 1991, they also developed a list of threatened species. They supported the development of natural protection areas, most notably Biosphere reserves. These reserves and their inhabitants are subject to conservation and management activities. These

various actions limit orchid harvesting and restrict their movement across borders (Flores-Palacios et al. 2007).

India also has regulations on the orchid trade, having listed several orchidaceae species under the Wildlife Protection Act of 1972. Their Customs Act of 1962 prohibits the collection, import, and export of orchid seeds and DNA, while the Biological Diversity Act of India also contains legislation on orchid trade (Hinsley 2018).

Nepal, on the other hand, has taken a different approach to conserving orchidaceae. In the 1990s, many efforts were made to conserve their native flora, such as the Forest Act of 1993 and the Forest Regulations of 1995 (Subedi et al. 2013). These laws prevented the sale, distribution, export, and collection of any forest-based products without a license (Forest Regulation 1995). However, in 2008, Nepal allowed the collection of wild orchids for trade, despite the new ruling contradicting CITES and other Nepalese policies (Subedi et al. 2013).

## Extent of Illegal Trade

Given the nature of trafficking, it is difficult to quantify the monetary value of illegally traded orchids. However, there has been research into the location of this trade, as well as rough estimates on the amount of product involved. The majority of this trafficking can be found in Southeast Asia (Phelps et al. 2015) and China, which is the largest Asian consumer of illegal orchids (Gale et al. 2019). Additional states involved can be found in Table I.

<b>Importer</b>	<b>Exporter</b>
South Korea	Thailand
United States of America	Taiwan
Japan	Nepal
China (including Hong Kong)	China
India	Mexico

**Table I:** A list of importer/exporter states involved in the international trafficking of orchidaceae species. List is in no particular order. List is not exhaustive. (Hinsley 2018; Gale et al. 2019; Seyler et al. 2019)

Various attempts have been made to quantify the amount of orchids involved in the illegal trade, but many are regional and do not address worldwide trade. A 2013 study in Nepal found 9.4 tons of orchids traded on the black market (Subedi et al. 2013). Another study in Mexico found that 47% of the state's epiphytic orchids were traded illegally (Flores-Palacios et al. 2007). There is also evidence that the internet is becoming a growing market for orchid trafficking. For example, a survey by Hinsley found that 10.8% of participants (mostly hobbyists and growers) admitted to selling or receiving orchids online without the necessary paperwork (2016).

Roadside sales are still common (Gale et al. 2019), especially in countries such as Thailand, where markets along the Laos/Thai border act as hotspots for trafficked orchids. One study found 347 different species for sale, most of which were illegally sourced from neighboring countries (Phelps et al. 2015).

These high rates of trafficking are possible due to the absence of monitoring at domestic markets. Many violators are aware of CITES regulations, but this does not deter criminal behavior. As knowledge of international regulations increases, so does the likelihood of the individual violating those regulations (Hinsley 2016). One example is Victor Manuel Arias Cucho, who pled guilty to knowingly trafficking Appendix II orchids. He was caught smuggling over 200 specimens through the United States without CITES documentation or a phytosanitary certificate. He deliberately did not declare the plants at customs, knowing that he did not have the proper documentation for them (United States 2015). Bans and controls imposed by CITES are often ignored through laundering, counterfeiting, and corruption (Gale et al. 2019).

## Solutions

While extensive legislation on the orchid trade is an important step in protecting these beautiful plants, much more needs to be done. Many experts recommend increasing our knowledge of the wild orchid trade, specifically by looking at the impact on wild orchid populations (Flores-Palacios et al. 2007; Hinsley 2018), understanding which orchids are affected by illegal trade, and studying trade volumes (Liu et al. 2020; Flores-Palacios et al. 2007). Other recommendations include making small nature reserves to protect endemic orchids (Liu et al. 2020), creating ex-situ collection networks that will increase conservation capacity (Flores-Palacios et al. 2007; Liu et al. 2020), and increasing surveillance on local markets



(Flores-Palacios et al. 2007). Strengthening the legal trade of orchids has also been recommended (Hinsley 2018).

## Conclusion

I think the wild orchid trade can be properly regulated if more emphasis is applied to enforcement. CITES and other international laws have laid extensive groundwork for preserving orchidaceae diversity. National governments have also developed plans to preserve their endemic flora. But without enforcement, these laws are nothing more than wishful thinking.

Market monitoring needs to be increased, as many researchers were able to find and purchase orchids with little to no effort. There is so little enforcement of current regulations, that many sellers openly admitted to being in violation of them. Customs employees also need to be trained in recognizing floral contraband, and more research should be conducted on the extent of Orchidaceae trafficking.

Another key factor in reducing the illegal orchid market is strengthening the legal market. Currently, this is difficult to maintain, as many people prefer cheaper, wild-collected orchids over more expensive, cultivated ones (Gale et al. 2019). However, cultivated orchids are far more sustainable because plant nurseries minimally disrupt native ecosystems. To incentivize cultivated over wild-collected orchids, governments could subsidize plant nurseries, create business incentives for nursery owners, or increase public awareness of the detriments of overharvesting.

These are only a few suggestions for combatting Orchidaceae trafficking, but they are the ones I believe to be the most essential to their conservation. By increasing the enforcement of already existing laws and lifting the propagated orchid market, orchid trafficking may finally begin to decrease.

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