

UNIVERSITY OF  
Southampton

FloraGuard:  
Tackling the illegal trade  
in endangered plants



## BACKGROUND AND CONTEXT

Illegal commerce in exotic and wild plants and their derivatives threatens and destroys numerous species and important natural resources, and may cause phytosanitary and health problems. Plants are harvested and traded all over the world to use their parts and derivatives for a variety of purposes, including as ornamental plants, pharmaceuticals, cosmetics, construction materials and food.

Opportunities to conduct this trade illegally have been boosted by the commercialisation of the internet, which facilitates the connection of supply and demand and makes it a real hybrid (online and offline) market. No matter how highly specialised the market in a certain species is, it is much easier to find potential buyers or sellers online than in the physical world. The global reach of the Internet means that these markets frequently cross international borders, which can see threatened species traded without the necessary checks and controls in place. These controls include the use of permits for trade in species protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which are only issued once the harvest or production of the species in question, has been shown to be both legal and sustainable.

The policing of illegal plant markets remains limited and poorly resourced, with law enforcement agencies often lacking the technical capacity required to detect, investigate and prosecute these crimes. Within this context, our research brought together criminology, computer science, conservation science and law enforcement expertise to analyse the criminal market in endangered plants by using mixed methods and cross-disciplinary approaches, and to explore strategies to develop digital resources to assist law enforcement.

## ABOUT THE STUDY

This policy brief is based on the project “FloraGuard: Tackling the illegal trade in endangered plants”, led by the University of Southampton (Department of Sociology, Social Policy & Criminology and Department of Electronics and Computer Science). The project has been supported by Royal Botanic Gardens, Kew and UK Border Force as Project Partners. The study employed a mixed method design including online quantitative, qualitative and visual analyses, and semi-structured interviews with law enforcement officers and CITES experts.

### Acknowledgments

This research is supported by the Economic and Social Research Council [ES/R003254/1].



# KEY FINDINGS

## 1. Insights into the internet-facilitated trade in threatened plants online and its policing

Our results provide evidence that use of the Internet helps to facilitate the trade in endangered plant species, as we found direct evidence in the posts analysed of illegal trades. In our study, we have identified a number of online markets active in the illegal sale of both live specimens and derivative products, discussed their more recent trends, and presented the main strategies used by suppliers to build and maintain their customer base, while minimising their risks. Our analyses also provided insight, among other things, into the attitudes exhibited by some online forum members manifesting apparent disregard for the existing regulations governing international wildlife trades (Convention on International Trade in Endangered Species of Wild Fauna and Flora – CITES). Complicating the picture for the trade in both live plants and derivative products, is the overwhelming lack of transparency that accompanies the trade in CITES-listed species online. Such opacity helps to mask the trade in plants illegally sourced from the wild, providing cover for those engaged in destructive practices that put the future of many threatened species in the wild at risk.

## 2. The advantages of an interdisciplinary approach

The ICT-enabled approach implemented in our study proved that socio-technical workflows mixing information extraction computer science tools and traditional criminology analysis methods can effectively reduce the volume of relevant posts that need to be manually analysed, speeding up the process. Keeping a “human in the loop” was deemed essential for making contextual judgements during investigations. The use of Named Entity (NE) Directed Graphs to examine and visualise the data proved sufficiently capable for exploring the connections between entities and presenting these in an interpretable way; the resulting picture of online communications enabled the relevance of specific people, locations, species and organisations to be evaluated.

## 3. A proposed ICT-enabled methodology for investigating online market-based crimes

The performance of the ICT tools and qualitative insights from the study suggest that these can be effectively combined in an improved socio-technical approach to criminological data analysis. This would involve criminologists and computer scientists working together, with the assistance of subject-matter experts, to explore the data in cycles, alternating between human-led analysis of the data, and the use of AI tools to follow up on leads in an iterative cycle of analysis.

# KEY RECOMMENDATIONS

## 1. Insights and application of ICT-enabled investigative methodologies

within real-world, intelligence-led investigations. However, critical training of law enforcement around the future use of AI tools in socio-technical deployment is needed, as the setting up of formal AI reviews should be formally encouraged. This would help decision makers use AI results in well informed ways, understanding both the capabilities of AI and also its capacity for error and bias.

## 2. Raising awareness of illegal plant trades as a form of wildlife trade,

which is too often limited to iconic animal species in popular understanding, International media and other communications, including from governments and conservation organisations, often reinforce this idea, by favouring stories and messages relating to “poster animals”. While this may help to draw public attention, it may also entrench blinkered views about the nature and priorities of international conservation.

## 3. Development of better policies of e-commerce.

It is pivotal to raise awareness both with e-commerce companies and with postal and courier companies. This could be followed by engagement to help develop policies and practices to adequately deter and disrupt the illegal trade in endangered plants across online platforms, followed by engagement to determine whether intervention points may exist within the transit chain, for example, through the detection of plants shipped under misleading goods declaration forms.

## 4. Engagement with Plant Trading Communities

to raise awareness among plant traders and buyers. This should include efforts to dissolve any existing barriers between some members of these communities and the institutions who enact CITES legislation, and might encourage community-policing within online forums.

## 5. Legislative Considerations

include the need for renewed consideration among national CITES authorities of the need for more stringent requirements for the online trading in CITES listed species of plants, and a review of the penalties imposed for different forms of internet-facilitated illegal wildlife trade, to ensure that crimes involving the destruction of wild plant populations are treated appropriately.



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Department of Sociology, Social Policy & Criminology, University of Southampton  
Dr Anita Lavorgna, Pl. [a.lavorgna@sused.ac.uk](mailto:a.lavorgna@sused.ac.uk)

Department of Electronics and Computer Science, University of Southampton  
Dr Stuart E Middleton. [semo3@soton.ac.uk](mailto:semo3@soton.ac.uk)

Conservation Policy, Royal Botanic Gardens, Kew  
Dr Carly Cowell. [CITES@kew.org](mailto:CITES@kew.org)