



Rooted in Crime: A Study of Plant 'Poaching' in the Succulent Karoo

by
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DECLARATION

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Abstract

The rapid escalation of the illegal plant trade in South Africa's semi-arid Karoo region since the coronavirus (Covid-19) pandemic foregrounded concerns about wildlife trade and biodiversity regulations, socioeconomic precarity, and the widespread loss of endemic flora. The Succulent Karoo, which is one of South Africa's three biodiversity hotspots, is at the centre of what is referred to as a 'plant poaching' crisis. The National Biodiversity Institute (SANBI) estimates that over 1.5 million plants have been poached since 2020, leading to unprecedented biodiversity loss. Community participation in illegal harvesting exposes deep socioeconomic issues in the Karoo. Economic explanations were important for understanding what motivated harvesters, but these could not fully account for participation in the trade. As the global demand for rare plants rose – driven in part by pandemic restrictions and the emergence of an online "plant culture" – the commodification of ornamental plants appeared to fuel extinction, increase vulnerability and precarity in communities, and decrease resilience. Conservationists and legislators implemented strategies to combat the illegal plant trade in the Karoo, which seemed to reduce the number of confiscated plants in recent years, but biodiversity regulations remained contested due to how they impacted the lives of individual actors and communities. Furthermore, partnerships between environmental protection and market-driven solutions may create new forms of value extraction that cannot ensure the ongoing survival of wild flora. This study examines how the trade in ornamental plants intersects with socioeconomic issues in the Karoo and the degree to which trade regulations risk criminalising local actors. It evaluates whether existing conservation policies and legislation can effectively address large-scale environmental destruction whilst accounting for social, cultural, and political complexities in post-apartheid South Africa. The research employs semi-structured interviews, observations, and analysis of wildlife crime legislation. This study aims to shed light on the complex intersections of crime and conservation whilst offering insights into how regulations can more effectively safeguard South Africa's unique floral heritage.

Keywords: Wildlife Crime, Conservation, Poaching

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List of Abbreviations

Abbreviation	Definition
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DFFE	Department of Forestry, Fisheries and the Environment (South Africa)
eCITES	Electronic CITES / e-permitting
EWT	Endangered Wildlife Trust
ESA	Endangered Species Act (United States)
IWT	Illegal Wildlife Trade
NEMBA	National Environmental Management: Biodiversity Act 10 of 2004
NRSAP	National Response Strategy and Action Plan
NRF	National Research Foundation
OECSs	Other Effective Area-based Conservation Measures
PAD	Plant Awareness Disparity
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks
SAPS	South African Police Service
ToPS	Threatened or Protected Species (ToPS) Regulations
UCT	University of Cape Town
UNODC	United Nations Office on Drugs and Crime

Research Participants

Respondent	Name	Description	Location of Interview
Conservationist 1	Sonwabile	Reserve manager	Northern Cape
Conservationist 2	Francis	Reserve manager	Northern Cape
Researcher 1	Olivia	Researcher for TRAFFIC	Online; Cape Town, Western Cape
Researcher 2	Claire	Researcher at the Institute for Security Studies	Online; Cape Town, Western Cape
Researcher 3	Frida	University of Hamburg, Germany	Online; Cape Town, Western Cape
Respondent 1	Ryan	Botanical guide	Calitzdorp, Western Cape
Respondent 2	David	Vetplantfees attendee	Calitzdorp, Western Cape
Respondent 3	Laura	Vetplantfees attendee	Calitzdorp, Western Cape
Respondent 4	Aletta	Nieuwoudtville resident	Nieuwoudtville, Northern Cape
Respondent 5	Rosalie	Nieuwoudtville resident	Nieuwoudtville, Northern Cape
Respondent 6	Jocelyn	Nieuwoudtville resident	Nieuwoudtville, Northern Cape
Respondent 7	Dana	Nieuwoudtville resident	Nieuwoudtville, Northern Cape
Respondent 8	Janine	Springbok resident	Springbok, Northern Cape
Respondent 9	Mirna	Nursery owner	Northern Cape
Respondent 10	Arno	Farmer	Kenhardt, Northern Cape

Introduction

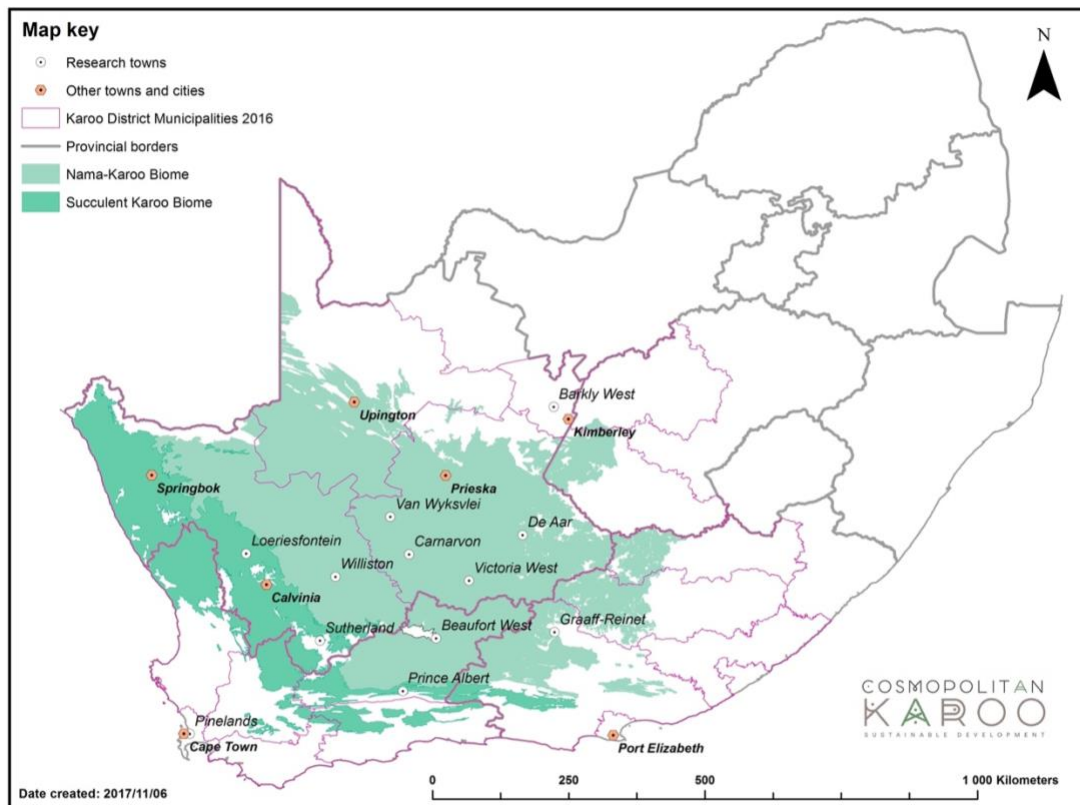
In 2002, my father purchased three young cycads for the front lawn of our Johannesburg home. These ‘prehistoric’ plants or ‘living fossils’, said to have inhabited the earth at the same time as the dinosaurs over 150 million years ago, were popular for gardens because they were hardy, easy to maintain, striking in appearance, and a symbol of prestige. They were ideal for adorning the roadside lawns of the leafy suburbs, where personal taste and status were otherwise hidden behind the city’s ubiquitous high walls and electric fences. Roodekrans, which sat above the Walter Sisulu National Botanical Garden, was an area where private, cultivated nature and ‘wild’ nature met uneasily. The area’s characteristic tangled, thorny shrubs and bush lillies merged with carefully manicured gardens, complete with elaborate displays of ornamental flora. Only decades after our experience of plant theft did I come to understand that the cycads on our lawn were not merely ornamental but part of a much larger and more complex story, one entangled with tales of organised crime syndicates, global conservation efforts, the destruction of natural heritage, and everyday struggles to make a living. Our cycads, like those decorating the homes of many other neighbours, were a part of the scenery of middle-class life up until the moment that they were ripped from the soil in the middle of the night. The three young plants and their suspected thieves were never found. I was too young at the time to know that cycads and other ornamentals were being stripped from the wild in other parts of South Africa and trafficked across the world to collectors. The cycad theft continued to be a point of discussion over twenty years later, when the value of rare plants and the scope of the ‘plant poaching epidemic’ had skyrocketed beyond what we could ever have imagined.

This thesis explores the illegal plant trade in the Karoo, where the large-scale harvesting of endemic species has become both a conservation imperative and a site of contestation over legality and social justice. Drawing on fieldwork observations and interviews with conservation staff, Karoo residents, and researchers, I examine how illegal harvesting, trade regulations, and biodiversity conservation are negotiated in a landscape marked by deep historical inequalities and ecological change. I approach the plant trade as a window into broader questions about the politics of criminalisation, resilience, and socioecological harm.

South Africa's Succulent Karoo biome stretches from southern Namibia through the Northern Cape and into the Western Cape (Figure 1), regions with varying biodiversity laws governing the trade and use of endemic species. Namaqualand covers about 50,000km² or approximately one quarter of this biome (Schmiedel *et al.*, 2010:111). The area displays exceptional biodiversity. With 6400 plant species, 40% of which are endemic, the Succulent Karoo hosts the world's largest concentration of succulent plant species (Rundel & Cowling, 2013). Between 2019 and 2023, the most frequently seized plants were dwarf succulents, geophytes, and caudiciform (Prinsloo, Burger & Newton, 2024:24). Dwarf succulents accounted for 979 447 of the 1 129 780 succulent plants that were seized during this period, with *Conophytum* being the most commonly poached taxon (Prinsloo, Burger & Newton, 2024:24). Law enforcement and conservation agencies reported a 250% increase in the number of succulents being confiscated annually (Smith *et al.*, 2023:719). One of the key features of this issue was that, rather than an increase in the frequency of incidents, it was the quantity of plants being seized in a single raid that was alarming, with numbers growing from 1 381 in 2018 to over 240 000 in 2022. These numbers reflect the plants that were successfully recovered from traffickers, but experts believe that the quantity of plants that have already left the country may be significantly higher.

Karoo nature reserves, where rare species grew under the protection of dedicated teams of rangers, botanists, and ecologists, became a frequent target of criminal groups searching for flowers and succulents. Because of this, the towns surrounding them had been drawn into the illicit market. Two such towns were Nieuwoudtville and Springbok. Nieuwoudtville, which has a population just over 2000 people, is home to two conservation or protected areas that attract nature lovers and ecotourists wanting to see the annual flower season, as well as collectors seeking indigenous flora for their homes and gardens. The welcome sign leading into the small town labels it as the "bulb capital of the world", placing it at the centre of the global flower trade. In contrast, Springbok is one of the bigger towns in Namaqualand, with a population close to 13000. It is a similarly popular destination for tourists and people travelling to the border. Both towns were not only host to highly threatened plants but also uniquely positioned in relation to protected areas, borders, and national roads, making them vulnerable to wildlife crime.

Figure 1. Map showing the Succulent Karoo and Nama Karoo biomes.



Source: Cosmopolitan Karoo, 2017.

The trade in wildlife is known to be one of the most lucrative trades in the world (Duffy, 2016:8). It is regulated by national laws and international treaties. Foremost amongst these is the Convention on International Trade in Endangered Species (CITES). According to the United Nations Office on Drugs and Crime (UNODC), the legal trade in CITES-listed plant species was valued at an average of 8 billion Euros annually between 2016 and 2020 (ECOSOLVE, 2025:20). While the entire illegal trade in wildlife is estimated to be worth 8-20 billion Euros annually (over 160 billion Rands), the specific share accounted for by plants remains unknown (Duffy, 2016:9). The United States, Germany, the Netherlands, and China are the top importers of ornamental plants by value (Hinsley *et al.*, 2025:226). In Europe, which is one of the main markets, the demand for these plants is expected to increase at an unprecedented rate over the next decade (Gabellini & Scaramuzzi, 2022:2). The Karoo plants that have fallen victim to organised crime syndicates, small-scale harvesters, and unwitting tourists alike are sometimes scarcely larger than a R2 coin, but their market value cannot be understated; the price of individual plants reaches well into the thousands.

The extent to which the South African economy benefits from this thriving ornamental trade is limited. Nurseries and horticulturists in the Northern Cape were indispensable in efforts to counteract the illegal trade and preserve the genetic material of indigenous species. Saturating the market with artificially propagated plants, assisting communities with resources to grow succulents, and providing nurseries with previously seized ones to sell were some of the ideas proposed to encourage greater local participation in the global plant trade. Nurseries also raised awareness amongst consumers. In response to the globalisation of ornamental plants and an increase in the number of South African species being propagated abroad, conservationists suggested that proper access and benefit-sharing agreements would ensure that genetic resources would not be exploited by industrialised countries. The burgeoning illicit market threatened the survival of legitimate businesses, making it difficult for the country's legal trade to thrive. However, trade regulations, changing environmental conditions, and the slowing down of the global plant trade in the post-coronavirus period compromised the legal trade. Reputable local sellers were disproportionately affected by climate change as ongoing drought in the Karoo limited their access to the water they required to maintain or expand their nurseries. Changes to the permit system, which required sellers to obtain documentation for particular species, created further hurdles that inadvertently hindered the legal trade while creating loopholes for criminal groups. Conservationists aimed to not only provide local sellers and nurseries with the means to benefit from the plant market but also to reclaim South Africa's position as the leading producer of its endemic species.

Conservation staff and wildlife crime researchers believed that participants in the illegal plant trade in the Karoo were part of the same criminal networks responsible for other wildlife trafficking in southern Africa, including rhino horn, abalone, and elephant tusk. Adopting lessons from earlier anti-poaching campaigns allowed them to respond quickly at the height of the crisis. The implementation of stricter sentencing succeeded in reducing the number of plants being confiscated but was met with harsh criticism from conservationists and locals. As we will see, respondents from my interviews feared that criminalising communities for harvesting endemic plants could reproduce existing harms without having a noticeable effect on the illegal market. Criminalisation of resource use was also perceived by some to be inextricably linked to South Africa's history of violent subjugation and conservation during the colonial and apartheid eras. Discussions with

my respondents about who was responsible for harvesting sometimes produced stereotyping and antagonism against foreign nationals, whom locals blamed for social and ecological issues. Locals and experts believed that South Africans were being disproportionately punished for participation in the illegal trade while wealthy collectors abroad were not held responsible. This resulted in backlash against biodiversity regulations.

Economic deprivation and poverty were viewed by wildlife crime and conservation researchers as the biggest drivers of participation in harvesting. The lack of opportunities, infrastructure, and access to education were some of the factors that drove people towards the illegal market (Prinsloo *et al.*, 2024). However, economic explanations failed to account for the full complexity of the illegal trade. The experiences of Karoo residents and insights of researchers (Interviews 1-6, 2024) highlighted how aspiration and status increased the likelihood, particularly of young people, to turn to wildlife crime. Criminal groups took advantage of these vulnerabilities to recruit young people, exposing them to greater risks.

During the course of the research, I became aware that authorities faced particular difficulty in monitoring the plant trade and enforcing regulations on social media and online platforms, where most exchanges between buyers and sellers took place. These platforms became particularly relevant during the coronavirus pandemic for two reasons. Firstly, they allowed business to continue when in-person sales were interrupted. Secondly, collectors used social media to share their collections, pick up gardening tips from others, and stay up-to-date on the newest species entering the market. The internet had long provided a space for the ornamental plant market to flourish. Platforms such as iNaturalist, designed to generate and share scientific data, were used by both individual collectors and large-scale traffickers to log and locate plant populations in the wild. On the one hand, the internet played a large role in facilitating the illegal succulent trade by streamlining the process of connecting syndicates to local people and providing anonymity. On the other hand, conservationists were able to use social media and online platforms to prevent and tackle trafficking by intercepting sales, identifying hotspots, tracking syndicate activity, and working with organisations across the globe to update policies or remove locality information from databases (Prinsloo & Whitehead, 2025; Interview with Researcher 1, 2024).

Revelations that conservationists, botanists, and law enforcement figures were themselves implicated in the illegal plant trade unsettled ideas of responsibility and legitimacy in the Karoo. When those entrusted with enforcing environmental law were suspected of benefiting from the same illicit economies they publicly condemned, the moral boundaries separating ‘criminal’ (or ‘poacher’) and ‘protector’ blurred. For some residents and conservationists, I met (Interviews 4 and 5, 2024), this made formal conservation appear hypocritical, eroding confidence in state-led interventions and producing a sense that legality was selectively applied. In my encounters with respondents, the figure of the harvester became a convenient scapegoat, obscuring the complicity of more powerful actors embedded within enforcement and scientific networks. This found expression in a deepening cynicism not only among local communities but also among those working within conservation NGOs, who in interviews reported feeling demoralised.

Feelings of scepticism and distrust were intertwined with experiences of burnout resulting from unmanageable workloads and severely limited resources. Conservationists and researchers I met expressed frustration with having to spend long hours away from their homes and families for work that they had not anticipated having. People frequently changed jobs or shifted their focus away from the plant trade when they found that it was impossible to sustain in the long term without becoming demotivated by the endless number of plants coming in from police seizures. There was a prevailing fear that plant trafficking would continue far into the future, with seemingly no end in sight. Despite their experiences of being overworked, under-capacitated, and pessimistic about the future of the country’s natural heritage, the conservationists I encountered displayed a remarkable drive to continue their efforts. The insights they offered into what motivated them provided not only a lens into the pervasive effects of the illegal plant trade, but also meaningful lessons about living and working with present troubles – rather than shifting uneasily between “awful or edenic pasts and apocalyptic or salvific futures” (Haraway, 2016:1).

The thesis will be structured as follows. Chapter 1 opens with an account of a succulent festival held in the Western Cape (Klein Karoo) town of Calitzdorp. The *Vetplantfees* sets the stage for the following chapters by introducing some of the plants and people at the heart of the story.

Chapter 2 describes the observations, interviews, and walking methodologies that were employed. The theoretical background situates the project in relation to environmental anthropology, green criminology, and studies of transnational environmental crime. The language of 'crisis' and 'poaching' is explored alongside the key concept of socioecological harm. This theoretical background demonstrates where the thesis fits in and introduces the reader to the extensive literature on conservation and wildlife crime. The chapter continues by delving into the phenomenon of plant awareness disparity and traces the historical events and knowledge paradigms that influenced contemporary conservation.

Chapter 3 provides a lens into the behaviour of collectors and the factors that contributed to the boom in the plant industry. The coronavirus (Covid-19) pandemic is identified as a key moment, providing a backdrop for the discussion of biodiversity and nurseries that follows. The chapter ends by looking at the role of technology and social media in facilitating harvester-collector connections as well as enforcement. This links to the role of digital technologies in enabling the plant trade during the pandemic.

Socioeconomic issues, deprivation, and aspirations are discussed in Chapter 4 in relation to harvester demographics. The resilience of criminal networks is unpacked to explain why conservation efforts are not always successful and how authorities have adapted in relation to criminal groups. This leads into Chapter 5, which focuses on crime, legislation, enforcement, and perceptions of criminalisation. Together, these chapters argue that illegal harvesting in the Karoo is driven by overlapping structural inequalities, local aspirations, and opportunistic criminal networks; and that conservation responses that ignore these dynamics risk criminalising marginalised residents.

Chapter 6 looks at how experiences of burnout and demoralisation amongst conservation workers were contrasted with their perseverance and dedication to preventing the Karoo's succulents from facing extinction. Despite witnessing the death of thousands of plants in their custody, facing budget cuts, being overworked, and witnessing their colleagues quitting or being accused of poaching, the botanists, ecologists, and crime researchers I interviewed found ways to keep moving forward.

Across these chapters, the illegal plant trade is rearticulated as a socioecological process that produces myriad harms. The accounts of researchers, conservation staff, and locals are used to foreground how biodiversity regulations can risk criminalising

communities and local sellers, thus reinforcing harms. The thesis aims to draw attention to how regulations and conservation approaches can avoid reinforcing harms by remaining attentive to individual contexts and the motivations for participation in wildlife crime.

Chapter 1: 'Vetplantfees'

The *Vetplantfees*, or succulent festival, is a three-day free-to-attend event that takes place annually in the town of Calitzdorp in the Western Cape. It is one of several special events organised by botanical societies and gardens throughout the year where ornamental plants are displayed and traded. Conservationists reported having little difficulty with sellers attempting to sell plants illegally at these events. The incentive for sellers to risk stocking wild plants amongst their cultivated stock appeared to be low and horticulturists expressed pride at being able to cultivate rare plants and supply the rare market, framing their work as a valuable contribution to the protection of biodiversity. Nonetheless, attendees were concerned about the risk of purchasing specimens that were harvested from the wild or lacking permits. Plant fairs and specialist sales raised another set of concerns. They created spaces where buyers, collectors, and casual enthusiasts were exposed to threatened species, sometimes for the first time. Exposure can spark fascination and desire, potentially expanding the market for species that are still vulnerable in the wild. Respondents indicated that, like the coronavirus pandemic, the *Vetplantfees* may have amplified pre-existing demand for succulents while also increasing pressure on the Karoo. Some aspects of the *Vetplantfees* demonstrated how collectors' tastes and certain forms of tourism sustain the illegal plant trade and markets that incentivise wild collection. It revealed the contemporary, local demand-side conditions that created a market for wild, slow-growing plants. Despite the educational potential of these gatherings, there was seldom an effort made to inform attendees about regulations and raise awareness about the socioecological impact of harvesting from the wild.

The *Vetplantfees* featured a relatively small number of stalls selling rare potted plants, pots, gardening materials and tools, and garden décor (Figure 1). The festival, which was organised by the Calitzdorp Succulent Society with support from the Gouritz Cluster Biosphere Reserve and the Calitzdorp Tourism Bureau, was well attended by plant lovers and collectors who travelled from far and wide to purchase rare plants or art and participate in succulent-related activities. Almost every province was represented by the number plates on the cars spilling out of the parking lot and lining the streets outside of the venue. Mud-covered camper vans and colourful tents were set up in a clearing directly next to the main warehouse for those who preferred to stay on the grounds.

When I arrived in the morning of the first day, there was scarcely a space available on the roadside next to De Krans Wine Cellar, a popular attraction that remained bustling throughout the day.

Figure 2. Plants on sale at the Vetplantfees.



Source: Photograph by F. Rahl-Botha, 2024, Calitzdorp, Western Cape.

The Vetplantfees was never crowded, but it remained relatively busy throughout the day, with attendees purchasing trays of small potted succulents, participating in activities, viewing art, or having lunch outside with their families. The botanical art section featured a range of impressive paintings and drawings of endemic species set up in a gallery layout inside the main warehouse. Outside, vendors sold *pap en kaiings*, *mieliepitte*, chip twisters, *braai sosaties*, and slushies from food and beverage stalls. I saw many of the same people at the restaurants and wine cellars I visited around the venue, which were fuller than the festival grounds. By the third day, I could easily recognise some of the festivalgoers, who were predominantly white couples, over the age of sixty, with large SUVs and 4x4 vehicles.

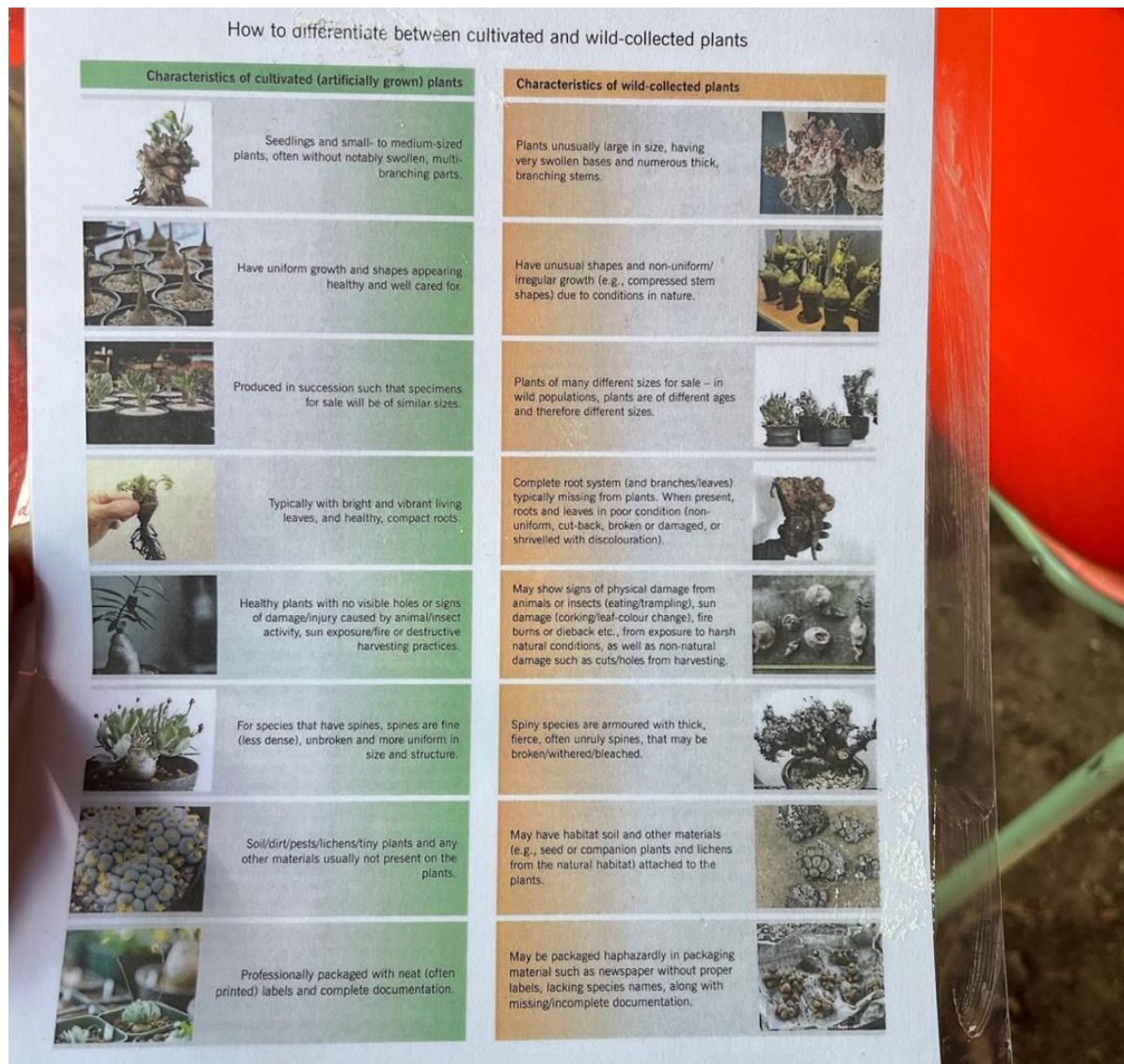
Calitzdorp is a small, quiet Klein Karoo farming town located along the R62 tourist route. It has a population of just over 4000 people (86% of whom are coloured) and a handful of businesses, some of which only open during the busier seasons. The term ‘coloured’ is taken from census data and the Kannaland Municipality socioeconomic profile (Western Cape Government, 2023). The town is part of a municipality where 62%

of the population lives below the upper-bound poverty line of R1 417 per person per month (Western Cape Government, 2023). The tourism associated with the Vetplantfees (and other annual festivals) is important for the local economy, but the opportunities offered may not be accessible to the majority of residents. I observed that the organisers of the festival and the vendors present for the duration of the event were all white and middle-aged. On the first day, there was a small group of uniformed schoolchildren who appeared to be assisting with organisation. Considering the size of the event, only a limited number of people can be directly employed over the three-day period and local people who cannot afford to set up a stall would not be able to benefit from the opportunity to make an income. Towards the end of the festival, stalls were still well stocked with hundreds of plants, likely because few attendees bought more than a handful. Evidently, the capacity for South African growers, small businesses, and Karoo residents to make a living from this sector of the legal plant trade was limited.

The weekend's programme included propagation workshops and the expert talks. The workshops, which cost R100 per person, focused on succulent plant propagation and container gardening. There were three expert talks on rock gardens, *Euphorbias*, and succulent poaching respectively. The third talk was led by Emily Kudze, a Senior Scientific Coordinator at SANBI, on *Safeguarding South Africa's Succulent Heritage*. It was fairly well attended (by about 8 people) in relation to the number of people around on that day and audience members were eager to comment and ask questions. The talk was well-received and people expressed their support for Kudze and SANBI's work. One person commented on their observation of roadblocks in Uganda being more frequent than those in South Africa, pointing to what they considered to be a noticeable gap between enforcement locally and abroad. This was an important observation because it not only indicated that there was potential for improvement in enforcement but also revealed local perceptions of conservation. People were simultaneously supportive of current interventions and critical because they knew that more could be done to protect the country's plants. Another audience member asked about the role of citizen science in the plant trade, displaying a clear interest in how locals could become more involved in scientific work. Emily passed around a printed notice (Figure 2) on "how to differentiate between cultivated and wild-collected plants". Noticeably, few people read through it for more than a few seconds, but this could have been a result of their familiarity with the topic. This was an effort to raise awareness amongst consumers, but it drew attention to the

lack of informational flyers and posters elsewhere at the festival. It was the only instance in which I encountered information being shared about the illegal trade at the festival itself.

Figure 3. Flyer on How to differentiate between cultivated and wild-collected plants.



Source: Photograph by F. Rahl-Botha, 2024. Calitzdorp, Western Cape.¹

One of the highlights of the festival was the display of highly specialised collectors' succulents that were entered into a competition and ranked by judges (Figure 3). The *Vetplantfees* offered another event that set it apart from many of the other succulent markets around the country. The rare plant auction was a unique opportunity for serious

¹ The flyer can also be found at <https://www.sanbi.org/wp-content/uploads/2023/11/Conscientious-consumers-SANBI-infographic.pdf>.

collectors to bid on plants and botanical art. Individual plants were sold for hundreds of Rands, with single *Conophytum* fetching up to R2 000.

Figure 4. Award-winning succulents at the Vetplantfees 2024. The Euphorbia polygona (centre) was named the “best plant in show”.



Source: Photograph by F. Rahl-Botha, 2024, Calitzdorp, Western Cape.

The auctioneer held up plants and described them simply by their species name and special characteristics. Some of those on auction had been displayed during the day. By the time of the auction, bidders seemed to know exactly which specimens they wanted; they appeared to wait for specific species to be named and were willing to accept higher prices to outbid each other. The auction functioned like any other, with individuals raising their hands to offer a bid until the highest bidder won.

Figure 5. One attendee of the Vetplantfees veld walk peers down at plants.



Source: Photograph by F. Rahl-Botha, 2024, Calitzdorp, Western Cape.

Daily veld walks were held on a private farm just outside town for R200 per person (Figure 4). These were led by a specialist guide, Ryan (Respondent 1), with the aim of allowing visitors to “see indigenous and rare succulents in their natural habitat” (Calitzdorp Succulent Society, 2024). These plants, the species and location of which will not be named in the interest of protecting them, were not growing in abundance, but a small number of individuals could be spotted occasionally. It seemed that without our guide, very few members of the group would have been able to find the plants on their own because they were hidden amongst rocks and other plants or under bushes. Some species displayed only their flat green tops (Figure 5), which botanists refer to as “windows”, that they used to absorb sunlight. On the surface, only a few centimetres of green might be visible underneath a larger shrub, which the plants use for shelter and protection. Some of the succulents were surrounded by small pebbles, which are beneficial because they help reflect harsh sunlight, thus creating a cooler microclimate. Ryan claimed that indigenous or First Nations groups knew where to find these succulents and which of the species could be safely consumed for hydration (Respondent

1, 2024). As we walked and searched for the little windows in the earth, we discussed the plight of Karoo succulents, consumer demand for the rarest of them, and how tourism was driving their destruction.

Figure 6. Small succulents visible between rocks.



Source: Photograph by F. Rahl-Botha, 2024. Calitzdorp, Western Cape.

The rise in succulent-focused tourism brought both benefits and drawbacks to the town of Calitzdorp. Despite booking over a month ahead of the 2024 Vetplantfees, I struggled to find accommodation near the town due to the guesthouses and hotels being fully booked. The festival organisers published the schedule in advance and attendees were encouraged to stay for the weekend to avoid missing each day's events, meaning that most visitors were likely to spend more than one day in the area. The accommodation sector thus benefitted greatly from the increased tourism that this festival brought with

it. However, farmers and landowners, whose properties contained highly sought-after endemic species, grew increasingly reluctant to host visitors due to the risk of plant theft.

When I asked Ryan whether landowners in the area had witnessed illegal harvesting, he explained that while they had not faced significant problems with poachers recently, many had nonetheless begun to restrict access and tighten security following earlier incidents of theft. In conversation with the group, he recounted one such case that had affected local farmers (Respondent 1, 2024):

There is definitely poaching taking place. There was an incident here in the past when it was unfortunately... they bought a property in town – you would think they know better, they were doctors but they were still from up in Joburg – and they thought it was a good idea to come here and remove some plants like *aloe longistyla* and some *glottiphyllums* and stuff to plant in their garden. And it was a big story because the actual owners of the property was there and they were just casually walking and collecting stuff and then the police came out and you can imagine that story.

On the one hand, Ryan's remark that the suspected harvesters were 'doctors' signalled an expectation that the well-educated would be more aware of threatened species listings or regulations on wild harvesting and thus be less inclined to participate in illegal harvesting. It was surprising for locals that people in socially respectable positions were amongst the 'poachers'. On the other hand, Ryan tentatively attributed their behaviour to ignorance born of distance, noting that they were from Johannesburg, a city in Gauteng that is over one thousand kilometres from Calitzdorp where almost none of the species he mentioned were naturally occurring. Importantly, Ryan's account also made clear that visitors were not collecting at random during a vacation but rather targeting specific endemic species. The removal of endemic species was read as both an ecological offence and a moral transgression.

Ryan went on to say that some collectors seemed to have strategically chosen accommodation for the opportunity to find rare plants on the owners' properties: "I know with a lot of the guesthouses also... the people can just come and walk here and unfortunately some of them are here specifically because of the plants. And then I would imagine, especially like the one I'll show you later, a small little *Ornithogalum* and then

your *Truncata* and other types of *Haworthias* would be on their list” (Respondent 1, 2024). David asked him whether people typically go for very rare plants, to which he explained that they “always go for those types of things, especially those slow growing, very endemic species; that’s what they would be after” (Respondent 2, 2025). Local accommodation and tourist facilities thus functioned as vectors for targeted plant theft as guesthouses provided easy access and cover for visitors to scout for specimens. Collectors appeared to be guided by botanical knowledge, which complicates ideas of removal as ignorance or mere horticultural enthusiasm.

Veld walk participants, expert talk attendees, and the conservationists whom I interviewed were surprised that there were people at the Vetplantfees who voiced that they could simply find plants in the veld rather than having to pay for them. An attendee of SANBI’s expert talk claimed that she had overheard someone say that she did not have to spend money there because she could pick wild plants for free. Laura (Respondent 3), who was on the veld walk, also reported having interacted with someone who did not see the point of purchasing species that grew elsewhere. As she put it, “it’s telling; you would think that people coming would understand the value of these plants” (Respondent 3, 2024). Regardless of whether people were aware of the illegal trade, there was a clear lack of recognition for wild plants and disregard for their environmental significance. This could be seen as a symptom of plant awareness disparity, a phenomenon by which people fail to empathise with wild flora. There was also a noticeable absence of visible signage or outreach materials providing information that might have deterred people from engaging in criminal activities. This was not necessarily a failure on the part of event organisers or conservationists, but rather a missed opportunity for NGOs, municipalities, and funders to engage an already interested audience.

Several people at the Vetplantfees voiced their concerns about purchasing plants. One member, Laura, expressed her refusal to purchase plants because she was concerned about their origins, fearing that sellers could be in possession of poached plants that she would not be able to identify. Ryan validated her concern by saying that he was suspicious of sellers at the festival, particularly those who were selling *Conophytum*. He knew that *Conophytum* colonies could take “ten to fifteen years” to grow which, according to him, was far longer than the sellers and competitors there claimed to have had their plants (Respondent 1, 2024). He argued that “even the big nurseries do it”, albeit with common species: “they’ll get a letter from the farmer, and they’ll go into the veld and they’ll take

these things out and then they'll stuff that container and then they'll send it away and then pack it" (Respondent 1, 2024). In my interview with Researcher 2, Claire, who worked for the Institute for Security Studies, confirmed that South African consumers were finding it difficult to trust that nurseries were acquiring or cultivating plants legally (Researcher 2, 2024):

I think the problem that people probably have with nurseries, and I struggle with this, is there's no way for the average consumer to identify if the plant that you're buying came from the veld or was propagated, so you're very much relying on the nursery owner's honesty. And I think that's where people probably struggle a bit.

Discerning collectors and plant lovers were evidently suspicious of sellers, making it difficult to continue supporting the legal market with the same enthusiasm.

David, another member of the Veld Walk group, reported that he had witnessed aloes being sold on the side of the road in Magaliesberg and could not imagine himself purchasing even these widely cultivated species from sellers who did not have permits, let alone buying rare or CITES listed succulents (Respondent 2, 2024). In response, Laura explained her understanding of why people continued to support sellers regardless of whether they possessed documentation: "But I suppose it's demand. People are buying them without a second thought, that's the problem" (Respondent 3, 2024). They recognised that the illegal trade was sustained more by unconscientious consumers than by harvesters and sellers. Ryan believed that the problem lay in locals not being able to benefit from the market: "if there's a demand, there should also be projects created that would benefit the local community, because these things go out of the country and then we don't get that stuff back again" (Respondent 1, 2024). He thus highlighted an issue that also came up in interviews with conservation researchers, namely that the money criminal networks were making was not funnelled back into the local or national economy. According to Researcher 1, Olivia, the problem was that "before we were even able to get it out and sell it ourselves, it's been taken from us and now it's being artificially propagated in nurseries overseas and they're benefiting from that income" (Researcher 1, 2024). Bringing profits from the plant trade back to Karoo communities was a complex issue. Olivia further explained that simple initiatives like creating community-run

nurseries would require huge investments without any guarantee of success (Researcher 1, 2024).

The Vetplantfees ultimately provided a snapshot of the dynamics governing both the legal and illegal plant trade in the Karoo. The festival was a microcosm of the larger succulent economy. The idea that wealthy, mobile collectors and tourists were participating in wild harvesting suggested that the illegal trade was driven to a large degree by the wealth of consumers. Tourists converged on small Karoo towns like Calitzdorp willing to pay premium prices for rarity, reinforcing demand even as formal supply routes tightened. When collectors are prepared to travel and pay, the economic incentive to source plants from nearby wild populations increases rapidly. Furthermore, by creating a moment of high visibility for succulents, the festival signalled to harvesters and intermediaries that wild specimens will find buyers. There was a clear gap in conservation outreach and awareness, presenting an opportunity for organisations with sufficient resources to reach consumers. Both landowners who risked theft on their properties and residents vulnerable to recruitment were exposed to the harms of the illegal plant market. The Vetplantfees illustrated how demand (not only supply-side opportunity), combined with plant awareness disparity, drove extraction in the Karoo. Rather than treating succulent-centred events as harmless hobbyist gatherings, evidence from Vetplantfees suggested that they are an important node in the supply-demand chain and therefore a practical site for intervention.

Chapter 2: Working with (and Walking with) Plants and People

1. Methods

This research took place over the course of two years from 2024 to 2025 and consisted of a month and a half of observations and interviews in Namaqualand, Northern Cape, and the Klein Karoo region of the Western Cape. These areas are part of the Succulent Karoo. Semi-structured online interviews were done with conservationists, botanists, project leaders, lawyers, and other experts working on the plant trade and related topics in South Africa. Semi- and unstructured interviews were also done with residents in two Karoo towns, Nieuwoudtville and Springbok. This was supplemented by visits to nurseries and botanical gardens as well as one succulent festival in Calitzdorp and one plant market in Stellenbosch. Overall, I completed a total of twenty-one interviews and attended two planning meetings and two workshops, one of which was during a conference. Before describing the interviews and participant observation, I will outline the recruitment process (for specialists working in areas related to the plant trade), the benefit of a scoping trip, and the workshops.

I established contact with conservationists and experts in the natural sciences by reaching out to them via their publicly available contact details. I was able to attend a National Response Strategy and Action Plan (NRSAP) meeting early in 2024, where I formed connections with individuals working for the South African National Biodiversity Institute (SANBI), Endangered Wildlife Trust (EWT), TRAFFIC, and the World Wide Fund for Nature (WWF). Through them, I was then introduced to members of South African National Parks (SANParks) and the Institute for Security Studies (ISS). I did not formally interview all of the experts I interacted with, either because they worked on the same projects or because they declined to participate due to conflict and risks associated with sharing information about enforcement with researchers. Nonetheless, this method of meeting interlocutors was effective for the topic of study due to the difficulty of entering the space: despite being welcoming towards fellow researchers and social scientists, experts working on the illegal plant trade were cautious of sharing information that may compromise their efforts or end up in the wrong hands. Finding individuals willing to discuss crime, security, and enforcement was a significant challenge, but the reluctance of conservationists to work with researchers outside of the field turned out to be a finding in itself. All experts were interviewed in their personal capacity, rather than as

representatives of their employers or organisations. Requests for the South African National Police Service to participate in interviews or participant observation were denied.

In April of 2024, I participated in a scoping trip to Namaqualand with the Cosmopolitan Karoo research group from the NRF South African Research Chairs Initiative (SARChI). During this trip, I was introduced to the topic of plant ‘poaching’ in more depth by a member of Conservation South Africa (a branch of Conservation International), whom I will refer to as Amanda. Her understanding of the poaching crisis and her approach to her work, which was one of accountability and reciprocity, inspired many of my ideas and my approach to working alongside the people whose stories I sought to collect. Hilton (2018) asserts that collaboration in anthropology – through working *with* people – offers an ethical commitment to a cause and produces theory that is rooted in lived experiences (Hilton, 2018:121). Although the extent of collaboration in this research was limited by the duration of the fieldwork, it took the form of developing questions with participants, reflecting with them on their experience of research, and thinking together towards solutions in workshops and conferences. The initial scoping trip laid the foundations for this.

The first workshop was in October of 2024 in Nieuwoudtville during the Arid Zones Ecology Forum conference (held in Calvinia), which I attended with my research group. The topic was Management of Protected Areas and OECMs (other effective area-based conservation measures). During both this workshop and the conference, there were several presentations on the topic of the illegal succulent trade. On 11 March 2025 I participated in the Launch Workshop of the Safeguarding Succulents Project, held at Kirstenbosch Botanical Garden, hosted by the University of Cape Town, Sungkonghoe University (Republic of Korea), University of Alabama (USA), and SANBI. Various stakeholders from different backgrounds were invited to take part. The aim of this collaborative workshop, led by a team specialising in sociology and criminology, was to co-design a supply-side consumer survey. Although the content of the presentations given at these events will not be analysed in this thesis, the discussions surrounding them are important for examining how scientific knowledge about poaching is shared, public responses to conservation, and some of the difficulties faced by professionals in this field. The scholars who organised and attended this workshop are widely recognised for their

contributions to the canon of political ecology, criminology, and wildlife crime literature. Their work was a starting point for the theoretical framework of this paper.

Interviews with experts in conservation and ecology were done both online and in person. As a methodology, interviews are understood as an active process in which a story is produced between the interviewer and interviewee (Young *et al.*, 2017:11). According to Young *et al.* (2017), interviews can generate high-quality ecological and socioeconomic data on specific conservation issues and create an understanding of the decision-making processes of stakeholders. During both fieldwork trips, I interviewed one nursery owner and nine residents in Nieuwoudtville, Vanrhynsdorp and Springbok – areas that all fall within what is defined as the Namaqualand region (Davis, Hoffmann & Roberts, 2016:2). Several of these were impromptu interviews that started off as conversations during participant observation, with residents readily inviting me to speak with them or sharing their perspectives and knowledge after hearing the general topic of my research. I was able to build rapport with interviewees and record natural responses. Apart from these instances in which I intentionally sought out individuals, there were times when I was approached out of curiosity or engaged in brief exchanges about my research. These interactions extended beyond the area of the study and added depth to my understanding. In this way, they became a “natural extension” of participant observation (Zhang & Wildemuth, 2017:240).

Unstructured- or informal conversational interviews take the form of a social interaction and allow the researcher to elicit an individual's social realities (Zhang & Wildemuth, 2017:239). This is not to say that they are without direction: the purpose and themes of the research are still used to guide the interview, but the questions are formed spontaneously based on the respondent's narration (Zhang & Wildemuth, 2017:240). Conversation can be central to field research (Burgess, 2003). This form of conversational interview proved to be effective because it did not interrupt the encounters I had with people during observations. The individuals I encountered were from vastly different backgrounds and occupations, meaning that my broad or generalised questions would not account for their personal experiences. Making use of an aide-mémoire was useful at times but respondents answered openly to prompts, in such a way that this became redundant; the conversation was allowed to flow naturally in a way that answered the central questions of the research. According to Zhang and Wildemuth (2017), the conversational form of unstructured interviews “allows the interviewer to be highly

responsive to individual differences and situational changes” (Zhang & Wildemuth, 2017:241). Respondents raised their own questions about the plant trade. I was exposed throughout the interview process to unanticipated themes and presented with entirely new questions that were sometimes confronting. Being able to explore new thoughts and allow participants’ responses to inform my questions was an important part of the research.

Unstructured interviews are complex in that they require the researcher to guide the interview and capture data without disrupting the flow of the conversation (Zhang & Wildemuth, 2017:243). I often refrained from taking detailed notes or interrupting the conversation to request audio recording permission, thus forcing me to sometimes rely on brief notes and memory techniques, both of which are characteristic of this type of interview (Zhang & Wildemuth, 2017:243). Most respondents requested not to be recorded due to the nature of the topic, but I was able to capture data effectively by expanding on the shorthand notes immediately after the interview. I typically pulled over in my car or returned immediately to my accommodation to write out these longer transcripts and reflect on the content of the interview. This approach often led me to reflect on my questions before going into the next interview.

Furthermore, to address different aspects of the research problem, I participated in events where buyers and sellers of ornamental plants were present. One such event was a rare plant market held at the Stellenbosch University Botanical Garden. The second was the 2025 *Vetplantfees*, or Succulent Festival, in Calitzdorp from 19 to 21 September, where I spent several hours every day at the Calitzdorp Station venue. Whilst there, I sometimes sat outside in the communal seating or inside at the bar, but I usually walked through the market to observe buyers and sellers and to note the different plants that were on sale every day. I photographed the festival activities and attended Expert Talks by various speakers. I also participated in a *veld* (field) walk organised by the Calitzdorp Succulent Society and led by a botanical guide and conservationist who specialised in Karoo flora. Between visits to the *Vetplantfees*, I explored Calitzdorp and visited the town of Oudtshoorn which is approximately 50 kilometres East. In the mornings and evenings, I took long walks around my accommodation, a guest farm less than halfway between the two towns popular amongst researchers for its unique geological landscape and endemic flora and fauna. I had chosen this accommodation by chance because it was one of the few

places with rooms available during the festival, but it turned out to be an ideal space to explore walking methodology and engage with people familiar with the research topic.

By partaking in the veld walk at the *Vetplantfees* and doing walks almost daily, both around my accommodation and in the surrounding nature reserves, I used walking as a methodology to develop a sense of place, connect with participants, and get to know the plants I wanted to write about. This method allowed me to immerse myself in the environment and the lives of its human and more-than-human inhabitants, but it also forced me to acknowledge the distance between myself (as someone who is not immediately affected by plant poaching in my everyday life) and the environment that local residents, rangers, gardeners, and botanists live with. In walking methodologies, place-making is produced through the action and process of walking (Springgay & Truman, 2017:4). As a method in ethnographic fieldwork, walking tours take into account what is absent from a place, the memories invoked by it, and individual connections between history and the remains of place (Springgay & Truman, 2017:21). Walking forces one to notice: in the bodily movement of brushing past shrubs, dodging anthills, stepping over rocks, and avoiding thorny bushes, one becomes enmeshed with the environment. This 'hapticality' allows the topology of place to be distilled into the body. Walking methodology invites one to engage the senses. As the members of the veld walk group branched out – their attention drawn by some or other specimen – our guide would invite us back together to smell, touch, or taste the leaves of a plant. Species were differentiated by taxonomy and made familiar to scientists and conservationists by science courses, but they were given weight by the process of walking.

Walking or *walking-with* is “an embodied way of knowing” (Springgay & Truman, 2017:4). It is encouraged by conservationists as a way to experience a natural environment and “as such embody empathy and care” for it, thus transforming place into something therapeutic and restorative (Springgay & Truman, 2018:22). This method enabled me to familiarise myself with plant species as I had entered the wildlife crime and conservation with a social science background. Over time, it came to be a central part of the research process, one that brought harmony and balance to the challenges that came with studying this topic.

This methodological section has aimed to demonstrate the practices that shaped the research process. Combining various methodological approaches allowed me to

examine different facets of the research question. The methods used drew attention to both the human and more-than-human lives at the centre of the thesis.

2. Theoretical Background

Environmental anthropology offers a theoretical framework through which to understand human-environment interactions on a local and global scale (Bajrami, 2022). Addressing the exploitation of natural resources, the extraction of fossil fuels, and the deterioration of global ecologies associated with the Anthropocene requires a deep understanding of the relationship between humans and the natural environment.

Wildlife crime takes place across what criminologists and behavioural scientists consider the micro-, meso-, and macro-levels, with different activities, actors, and harms concentrated at each level (Wellsmith, 2011:128). Subsistence poaching is situated at the micro-level while domestic trading and organised hunts are meso-level crimes (Wellsmith, 2011:128). Wellsmith (2011:128) found that conservation literature and media reports paid the most attention to the macro level where the international trade takes place. The illegal plant trade follows a similar pattern; it ranges in seriousness from individuals harvesting wild plants for subsistence, to local dealers and middlemen, to the larger organised international trade. Understanding the trade across these scales foregrounds how it is experienced differently by various actors despite producing cumulative ecological and social harms. TRAFFIC, a wildlife crime NGO, identified the demographics of role players in the succulent supply chain across the levels of illegal harvesters; intermediaries; exporters, organisers, and financiers; and syndicate leaders (Prinsloo *et al.*, 2024:23). Importantly, the involvement of local South Africans was mostly confined to the harvesting and intermediary levels (Prinsloo *et al.*, 2024:23). Their findings underscored the uneven distribution of risk and profit along the supply chain and drew attention to how local actors were embedded within broader transnational flows of demand and capital.

The illegal wildlife trade is studied by green criminologists as a form of transnational environmental crime, which involves cross-border or international crimes that are harmful to the environment, humans, and non-human animals through pollution or the direct harm of wildlife (White, 2011:3). A transnational lens is useful because it reveals the points at which the local practices connect with global markets and

regulations. Criminologists caution that definitions of crime are not neutral. Rather, they depend on who has the power to determine whether harm has occurred and the type of measurements they use to assess the extent of it (White, 2011; Hübschle, 2022), meaning that conventional legal definitions of harm may be limiting. Powerful actors, including the state and corporations, shape official definitions of illegality and harm (White, 2011:3). Examining how definitions of crime put forward by the state and scientific authorities differed from those of communities may partly explain resistance towards biodiversity regulations and sentencing structures. The concept of communities is used tentatively, with awareness of its problematic use in colonial and apartheid ideologies that erased the individuality of black people. Following Hübschle and Shearing (2018), 'local communities' are defined as groups that are connected to a particular place and time.

This thesis examines transnational environmental crime through the lenses of eco-global criminology and Southern criminology. Eco-global criminology, a branch of green criminology, focuses primarily on the study of environmental laws and regulations on a global scale and with a particular attention to ecological considerations (White, 2011:19). This approach questions the extent of harm caused by particular activities, rather than their legality, and aims to form broader, less anthropocentric definitions of environmental crime than those in conventional law and criminology (White, 2011:20). Thus, ecological conceptions of harm are more holistic. The new approach of Southern criminology complements this by offering another inclusive theoretical perspective that focuses on the experiences and perspectives of the global South and acknowledges social and geographical divides (Sollund & Runhovde, 2020:1017). In this framework, the global South is recognised as the source of natural resources and wildlife, while the global North is a consumer. The Karoo, as a source region, is embedded in asymmetrical relations of extraction that impact how and by whom natural resources are used and governed. Scholarship within Southern criminology also notes classed patterns of consumption within the South itself, where wildlife use is often concentrated among upper classes (Sollund & Runhovde, 2020:1017).

Despite the sense of what Haraway (2016) describes as 'multispecies urgency', brought on by the Anthropocene's onrush of extinctions and immiserations, some argue that we must resist the urge to use the language of 'crisis' that has often led to stigmatisation and perpetuated harms in other contexts. The language of crisis is often used in the conservation space, but crisis responses in the past have failed to protect

rhinoceroses (Hübschle & Margulies, 2023:2). Barrios (2017) describes how crisis comes to be “mobilized to indicate an individually or collectively experienced moment when the customary flow of everyday life is brought into question”. It is a turning point in the life of a system (Moore, 2016:2). The Anthropocene is widely viewed as an all-pervasive ‘planetary crisis’ (Moore, 2016:2; Ghosh, 2021:19). At the height of the illegal plant trade, crisis was an effective term for describing the turning point when harvesting skyrocketed, but one must consider whether continuing to view it as a crisis is appropriate or if it opens the door to responses that fail to take into account the full picture.

Criminologists and researchers troubled the language of ‘poaching’. Duffy (2010:10) asserts that poaching is “produced as a category by a process of enclosure and criminalization which then intersects with a range of motivations: subsistence, financial gain, resistance to wildlife protection laws, even as a military strategy.” It relies on the creation of an omnipresent criminal enemy whom policies can be directed against (Duffy, 2010:10). ‘Poaching’ appears as a static, a-historical term that directs thoughts to atomised events (Goodall, 2020:230). Plant ‘poaching’ is ineffective because it risks perpetuating stereotypical ‘poacher’ narratives that mask a complex reality and criminalise certain groups. The term ‘harvesters’ will be used to describe people who remove wild plants, while ‘illegal harvesting’ will be employed to describe the taking of plants in violation of biodiversity regulations. Following Goodall (2020:230), concepts such as ‘illegal taking’ have the capacity to capture the “contingent relational and context-dependent aspects of the offending process”. Illegal harvesters are part of (and often at the bottom of) a chain of role players (Prinsloo, Burger & Newton, 2024:22). The concept of poaching therefore may not adequately account for the power dynamics and hierarchies present in criminal networks, as well as those between poor local harvesters and international collectors.

Hübschle and Shearing (2024:6) argue that socioecological harm reduction can minimise harms produced between those directly engaged in illegal wildlife economies, communities living where desirable wildlife is located, and the species and ecosystems affected by these economies. The concept of socioecological harm names harms that directly degrade ecosystems (via genetic erosion and population decline), indirectly undermine social wellbeing (through lost livelihoods and criminal records), and multiply through governance and market responses. Some forms of harm are

recognised as inevitable in the illegal wildlife trade, but practices that foster meaningful sustainable use and livelihood opportunities can minimise these (Hübschle & Margulies, 2024:6). The socioecological harm reduction approach offers clear research priorities for environmental anthropology. Importantly, this approach supports people's rights to livelihoods that depend on other species (Hübschle & Margulies, 2024:6). Prohibition responses are sometimes both ineffective and harmful to conservation efforts. Sustainable conservation strategies require attentiveness to socioeconomic realities and ecological needs, as well as inclusive global decision-making processes (Hübschle & Margulies, 2024:5). This thesis adopts the socioecological harm reduction approach, taking the standpoint that harm is not reducible to either ecological loss or social injustice alone.

Theories of resilience offer a lens through which to examine socioecological systems, criminal networks, and harms. Resilience relates to the ability of a system to respond and adapt to change. Maintaining socioecological resilience depends partly on a system's ability to self-organise, learn, and adapt. Biodiversity assists socioecological systems in maintaining resilience by reducing vulnerabilities to fluctuations in the environment (Yao & Liu, 2022:11). The implementation of environmental policies that regulate the plant trade, along with the application of new monitoring methods (including succulent detection dogs) and technologies (such as AI), have potential to improve a system's resilience. Community resilience is defined by Magis (2010) as "the existence, development, and engagement of community resources by community members to thrive in an environment characterized by change, uncertainty, unpredictability, and surprise".

The concept of resilience has a negative denotation when it is applied to criminal networks. In the Karoo, the criminal groups that are involved in the plant trade vary between institutionalised groups – that have been implicated in other illicit trades, including rhino horn, *perlemoen*, and drugs – and more fluid criminal networks, the latter of which have become increasingly common in transnational environmental crime (Ayling, 2013:69). Both of these groups tend to demonstrate resilience when faced with both opposition from authorities and social or economic changes (Ayling, 2013:69).

In studies of victimisation, criminologists have shown that people of colour and minority groups are disproportionately impacted by environmental problems, leading to differential victimisation (White, 2011:110). Environmental law enforcement often falls

hardest on historically marginalised groups and disproportionately affects indigenous peoples and people of colour (Goyes, Hübschle, Okafor-Yarwood & South, 2024; Brockington, 2002). Within these populations, socially differentiated characteristics put people at greater risk of experiencing environmental inequalities. Gender, age, and general health play a role in victimisation (White, 2011:110). Analyses of the political ecology of conservation find that its interventions have a propensity to criminalise and increase the vulnerability of marginalised populations (Massé *et al.*, 2021; Brockington, 2002).

Massé, Givá, and Lunstrom (2021) employ a feminist political ecology of crime to examine rhino poaching and militarised conservation responses in and around the Kruger National Park. Their study addressed how poaching economies intersected with local gender norms, particularly those associated with masculinity and widowhood. Feminist political ecology sees gender as intertwined with socioeconomic issues and the processes of colonisation, capitalism, and conservation that create dynamics of underdevelopment, violence, and exploitation. These not only impact the relationships that men and women have with the environment but also directly inform poaching economies (Massé *et al.*, 2021:209). The authors argue that the lengthy prison sentences and killing of husbands as part of heavy-handed or militarised responses “erode the gendered safety net and social fabric of communities”, leading to exacerbated poverty amongst women and households despite the short-term financial benefits of participation in poaching. Indirect victimisation can arise from enforcement efforts, leading to worsened socioeconomic injustices for households and communities. Victimisation is understood by feminist criminology scholars as occurring within the context of gendered relations.

In the Kruger National Park, young men from Mozambique who risked death at the hands of anti-poaching teams weighed this up with the danger they were already facing by working in the mines. Massé *et al.*, (2021) found that the dread of not being able to support their families drove rhino poachers to accept greater risks. In their report on illegal wildlife trafficking, Hübschle and Shearing (2018) aimed to understand why rural communities in southern Africa participate in the wildlife economy and how community-based interventions can prevent poaching whilst increasing resilience, with a focus on the trade in rhino horn.

The militarisation of rhino poaching is important to understand because it offered crucial lessons for plant conservation. Brockington and Scholfield (2010) argue that conservation NGOs are sometimes able to appeal to funders by working “so directly and decisively” during crises (such as elephant poaching) that they “appear to usurp states’ prerogative of legitimate violence” (Brockington & Scholfield, 2010:564). This is drawn from Weber’s idea that the state successfully lays claim to the monopoly of legitimate physical violence; the state alone can use physical force and coercive means to obtain compliance (Weber, 1994:564). Scholars suggest that responses to urgent conservation situations are increasingly becoming militarised, allowing organisations to use the kind of force normally reserved for governments (Brockington & Scholfield (2010); Hübschle & Margulies, 2024; Duffy, 2014; Witter, 2021). Dunlap and Fairhead (2014) add that the securitisation of climate change and militarisation efforts are often not genuinely aimed at solving environmental problems. Rather, these efforts support the expansion of ‘green capitalism’, lead to militarised forms of resource control, and reinforce the same systems that led to environmental degradation in the first place (Dunlap & Fairhead, 2014:2). Resource-intensive, often violent measures may appeal to funders because they demonstrate a kind of ‘successful’ conservation.

In the Karoo, talk of increased securitisation and potential militarisation raised concerns amongst experts. Hübschle and Margulies (2023) observe that the militarised response to rhino poaching in southern Africa led to the disproportionate targeting of low-level poachers (Margulies, 2023:1). In these cases, the State’s conservation priorities were seen to override basic human needs in already marginalised communities. The authors caution that importing the ‘war on poaching’ model to the illegal plant trade will likely recreate these harms. Intensive securitisation and militarisation have not yet been implemented to tackle the illegal plant trade, but the responses of the public and some experts to the perceived crisis have leaned towards calling for more radical measures. During their research, Hübschle and Margulies (2023) sat in on a meeting during which attendees “openly supported a presenter’s call for shoot-to-kill orders to deal with succulent poachers” (Hübschle & Margulies, 2023:3).

Altman, Shennan, and Odling-Smee (2022) point out that the number of ornamental plant species cultivated today outweighs all other agricultural and horticultural food crops combined (Altman et al., 2022:124). Aesthetic considerations, which are determined by personal taste, symbolic values, and sociocultural context, drive

the domestication and cultivation of ornamental plants. The aesthetic value of a plant species has to do with the colour, shape, fragrance, texture and variegation, and form of the flower and/or leaves (Altman et al., 2022:125). Hinsley et al. (2025) argue that ornamental plants – which are ephemeral, have low unit value, and possess no nutritional value – may be reflective of changing patterns of wealth, which will continue shifting with the growth of new markets (Hinsley et al., 2025:224). The ornamental plant market was directly linked to the illegal plant trade in the literature. Houseplants were among the ornamentals being traded. Houseplants, which Effinger (2022) defines as any plants within the general indoor or indoor-outdoor space of the home, co-exist and are shaped by other people and objects within the space (Effinger, 2022:2). Houseplants are believed to improve people's lives by reducing stress, offering companionship, and providing both educational and recreational opportunities (Carabelli, 2020). These plants were particularly popular during the coronavirus (Covid-19) pandemic, which partly explains the boom in the illegal trade. Effinger (2022) argues that the naming and constructing houseplants as kin became increasingly common in the years during and after the pandemic. His study on ecological homemaking found that 40% of houseplant owners during the coronavirus pandemic expressed a sense of kinship with houseplants by ascribing names such as 'baby' or 'babies' to them (Effinger, 2022:31). Kinship ties between plants and people are not uncommon; many cultures and peoples have formed intimate and embodied relationships with plants (see Miller, 2019). Haraway (2016) asserts that the recomposition and extension of 'kin' is enabled by "the fact that all earthlings are kin in the deepest sense".

Another theme in the scholarly literature on plants concerns the concept of 'plant blindness', which refers to a phenomenon whereby both collectors of ornamental plants, illegal wildlife trade researchers, and policymakers do not appreciate the importance of plants in the natural environment (Margulies *et al.*, 2019; Balding & Williams, 2016). 'Plant blindness' is the commonly used term in the literature (Balding & Williams, 2016; Amprazis, A., & Papadopoulou, 2020). It uses the more linguistically familiar concept of 'blindness' as a metaphor for missing information (Wandersee & Schussler, 2001:2). However, this thesis will employ the term 'plant awareness disparity' (PAD) more recently put forward by Kathryn M. Parsley. Parsley (2020) traces the development of the term 'plant blindness' and draws attention to how it equates the disability of blindness with an undesirable trait, thus making it a problematic and ineffective. She

advances the idea of “plant awareness disparity (PAD)” as a more appropriate term to address the symptoms of plant blindness without losing the original meaning. Although plant blindness effectively encompasses the phenomena of attention to, attitude towards, knowledge of, and relative interest in plants, it is contested for devaluing disabled people and potentially leading to a mistaken belief that people do not see plants at all (Parsley, 2020:599). PAD gets to the heart of the issue: that there is a disparity in the way that people treat and respond to plants (compared to animals), but the lack of awareness can be overcome through education (Parsley, 2020:600).

The commodification of succulents and consumerism are also seen to contribute to illegal harvesting. In Europe, the desire amongst citizens to ‘green’ their lives with houseplants is linked to the expansion of the middle and urban upper classes and the affirmation of ‘neo-luxury’ consumerism (Gabellini & Scaramuzzi, 2022:2). Having developed a desire to experience nature up close, people seek controlled, privatised encounters with flora and fauna. These encounters could help the survival of species but only in captivity in zoos or, with the help of the global black market, in individual homes as pets – both of which create restrictive, exploitative environments that turn captive nonhumans into “undead things” and emotional labourers (Lorimer, 2015:156). From this perspective, such forms of commodification cannot ensure the ongoing survival or protection of species in the wild. If conservation continues to rely purely on market-based approaches, it will fail in achieving the long-term protection of species. Lorimer’s (2015) conceptualisation of the commodification process (and the role of popular media in it) focuses on animals and thus cannot entirely account for plants. Nonetheless, the capture of wildlife and its transformation into emotional labourers offers a point of departure from which to understand the roles that plants took on leading up to and during the Covid-19 pandemic.

In *The Cultures of Collecting* (1994), Elsner and Cardinal explore the act and process of collecting as a cultural, social, and psychological phenomenon that both reinforces and challenges norms. By framing Noah (in the *Book of Genesis*, chapters 6-9) as the archetypal collector, they argue that collecting is a response to the threat of a Flood-like event. Noah’s purpose was to save the world by rescuing all categories of living things from their imminent extinction. Thus, the act of collecting becomes inseparable from the act of rebuilding a better world (Elsner & Cardinal, 1994:1). Collecting takes place on both a personal and societal level and is rooted in attempts to not only impose

or maintain order but also to defy time and mortality. The process is inherently tied to classification because collectors seek completeness within a predefined system (Elsner & Cardinal, 1994:1). Further research is required to understand collector motivations and how they drive the illegal market.

The theoretical framework thus far has brought together environmental anthropology, eco-global and Southern criminologies, feminist political ecology, and resilience thinking to produce a lens for analysing the illegal plant trade in the Karoo in the context of the Anthropocene. This framework shapes the thesis's empirical priorities and methods, requiring close attention to local actors and contexts, to transnational flows of capital and aesthetics, and to policies that can produce or alleviate layered social and ecological harms. The next section will contextualise South African conservation and provide a brief history of the ornamental plant trade.

3. A Brief History of Conservation in the Karoo

Tracing the histories of both the ornamental plant trade and conservation paradigms in South Africa is essential for understanding how we have arrived at the present moment. These histories produced asymmetrical relations of power and left Karoo communities vulnerable to both the effects of transnational crime and to being criminalised for particular forms of natural resource use. The region bears the enduring legacies of colonial and apartheid-era land dispossession, racialised labour systems, and economic marginalisation. Historically, land was concentrated in the hands of white commercial farmers, while Black and Coloured communities were dispossessed and confined to marginal spaces, where they were dependent on precarious or seasonal labour. Addressing the illegal plant trade requires sensitivity to the legacies that have disproportionately affected vulnerable populations and acknowledging that wealthy collectors in the global North have more to account for than poor local harvesters. Haraway (2016) reminds us that obligations to support the thriving of living species are not equally distributed: “we are responsible to and for shaping conditions for multispecies flourishing in the face of terrible histories, and sometimes joyful histories too, but we are not all response-able in the same ways. The differences matter – in ecologies, economies, species, lives” (Haraway, 2016:29). Early South African conservation paradigms restricted access to land and resources. In the Karoo today,

communities continue to be aware of how access to opportunities and markets are affected by race and class; present conflicts over plants are inseparable from questions of social and ecological justice.

Ornamental plants share a long history with human culture and society. The earliest uses of ornamentals may have been in ancient burials (Altman et al, 2022:127). In one instance, archaeologists unearthed Natufian grave linings made of flowers estimated to be 13,700-11,700 years old (Nadel et al., 2013:1). Sites like these suggest that flowers have been used for millennia to stimulate emotional and social responses, express religious feelings, and possibly enhance group solidarity (Nadel et al., 2013:1177). The era of Dutch *tulipmania* in the sixteenth century saw the breeding, cultivation, and trade of tulips on such an unprecedented scale that it became one of the first economic 'bubbles' in history (Moore, Artz & Ehlen, 2017). In the 17th-18th centuries, European botanical travellers and explorers frequently collected and domesticated new ornamental flora species from abroad (Altman et al., 2022:128). They described the novelty and uniqueness of southern African flora in detail (Reinten, Coetzee & Van Wyk, 2011:934). South African plants became the source of genetic material for cut flowers across the globe and tens of thousands of plants, bulbs, and seeds were shipped across the globe for gardens and herbaria (Reinten *et al.*, 2011:935). The country's oldest succulent nurseries were established in the 1950s (Bruwer, 2023:9).

Dutch colonial authorities provided settlers with permits for land occupation in the Cape in 1679 (Jonas, 2004:5). Farming had extended throughout the Succulent Karoo by the 1760s. In the 18th and 19th centuries, the Karoo was in the process of being incorporated into the Cape Colony and the colonial boundary had moved further into the North (Walker & Hoffman, 2024:9). Indigenous populations faced violent subjugation at the hands of armed European pastoralists (Walker & Hoffman, 2024:9).

The designation of protected areas and conservation areas was facilitated by the implementation of national legislation in the 1960s (Hoffman & Gilson, 2024:2). The recognition of the Succulent Karoo as a biodiversity hotspot resulted in wider areas coming under formal conservation regulations (Hoffman & Gilson, 2024:202). Biodiversity hotspots, described by Conservation International and the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) as both biologically rich and deeply threatened, must fulfil the criteria of containing over 1500 species of endemic vascular plants and having lost at least 70% of their primary native

vegetation (Koenig, 2016). The Leslie Hill Succulent Karoo Trust, established in 1995, contributed significantly to the expansion of protected areas (Hoffman & Gilson, 2024:15).

Walker and Hoffman (2024) suggest that the assertion of power over local people and the environment was central to the Karoo's history. Once a frontier zone, the Karoo is now considered a resource frontier where the state and corporations seek to extract as much value as possible from its rich natural resources (Walker & Hoffman, 2024:311). Biodiversity is only one of these resources. Long histories of human use transformed both the Nama and Succulent Karoo biomes; the landscape was left degraded and vulnerable to drought and biodiversity loss by inadequately regulated mining, overharvesting of indigenous plants, and pastoralism (Hoffman & Gillson, 2024:201). Drought and aridity had a significant impact on the way that conservation was structured in southern Africa throughout the colonial era. Currently, aridity is characteristic of over 90% of South Africa and climate change studies in the early 21st century theorised that the entire country, and particularly winter rainfall areas, will experience extreme events such as drought more frequently over time (Hoffman, Carrick, Gillson & West, 2009:54).

Severe droughts in the 19th century prompted a 'desiccationist' narrative to emerge in which climatic conditions were linked to human activities (Hoffman *et al.*, 2009:59). As a semi-arid region, the Karoo was at the centre of these narratives. Drought was a focal point in discussions about the effects of human use on the environment. These narratives were readily translated into policy instruments that regulated, excluded and criminalised particular kinds of land use. Grove (1987) traces the development of conservationism in the Cape to a series of droughts in the 19th century that triggered changes in Western and colonial science.

Missionaries during this period were dismissive of indigenous explanations of environmental processes and at times attributed declining annual rainfall to the destructive activities of populations like the Tswana in Kuruman – who in turn believed that European colonisers and their religion were responsible for the drought (Grove, 1987:165). Observations of the effects of human activities on the environment informed conservation policies after 1843 in the Cape. Drawing on the work of missionaries like John Croumbie Brown (who later became the Colonial Botanist), the state used new conservationism to blame African people for environmental destruction and legitimate new tools of discriminatory land use control (Grove, 1987:164). Despite Brown's 1863

Report of the Colonial Botanist attributing long-term desiccation, floods, soil erosion, and pasture deterioration in southern Africa to both settler farming practices and Black people's land use, the state selectively used his work to morally condemn the activities of Black people and justify establishing forest reserves to expel them from forest land (Grove, 1987:183). The translation of desiccationist discourse into conservation law and practice thus had concrete institutional consequences.

Forestry and range-management bodies established reserve regimes and regulatory instruments that restricted access to fuelwood, pasture and other resources, often without regard for customary right or indigenous practices. D.E. Hutchins, an Indian Forest Service officer who worked in the Eastern Cape Conservancy and later as Conservator of Rhodes' Matopos (Matobo) National Park in southern Zimbabwe, linked veld burning and tree felling (methods that were also used by white farmers) to moral degeneration and criminality. His selectively applied desiccation theory, paired with emerging social Darwinism, gave the state an instrument to criminalise people working around expanding colonial forests; "the indigenous farmer or fuelwood gatherer was transformed into a poacher" (Grove, 1987:185). Early policies prefigured later conservation paradigms that valorised "pristine" nature and created space for poor and black resource users to be placed under surveillance and policed. Desiccation theories were inextricably linked to evangelical ideas of an idyllic, pristine, fertile Eden that had to be protected from the evils of deforestation at the hands of black farmers and harvesters by criminalising and excluding them.

Colonial legislation further removed hunting rights and criminalised African livelihood practices in Sub-Saharan Africa in favour of European colonisers' hunting and sports industries (Duffy, St John, Büscher & Brockington, 2016:15). Community resistance to conservation legislation persisted beyond the colonial era as communities insisted on their right to access wildlife (Duffy *et al.*, 2016:15). In more recent decades, conservation and anti-wildlife crime organisations have discussed possibilities of expanding protected areas to secure plant populations (Bruwer, 2023:17). Talk of expansion and lack of transparency from states and conservation organisations in earlier contexts have created fear and suspicion amongst communities in southern Africa that they would face eviction or have their attempts to use resources redefined as criminal acts (Duffy, 2010). This concern has been closely linked to colonial histories (Duffy, 2010). Further restricting access to plants and conservation areas that communities have

long interacted with (and depended on), without providing viable alternatives, may reinforce exclusion.

From colonial-era exports of botanical specimens to contemporary networks that connect Karoo flora to specialist collectors in the global North, the flow of value has typically been outward: rare plants, indigenous knowledge, and economic benefit were transferred to distant centres of demand, while the social and ecological costs were borne locally. The uneven geography of access to land and resources continues to shape livelihoods today. Many residents rely on intermittent agricultural work, state grants, and informal income-generating activities – an existence made more uncertain by drought and climate variability. “Archaic and elitist preservation and conservation paradigms that discount the potential for harmonious relationships of local communities and wildlife” remain deeply rooted in the present (Hübschle, 2017:440). Current conservation programmes and reports recognise that illegal plant harvesting is a practice embedded in specific histories, rather than an individual moral failing. However, regulations that criminalise poor harvesters risk reproducing the inequalities established under colonialism and apartheid by criminalising certain types of interactions with the environment. Treating all participants in the illegal plant trade as equal under the law risks ignoring the deep structural inequalities that shape who becomes involved, why they do so, and who ultimately benefits or bears the brunt of punishment.

Chapter 3: “If they’re gone, they’re gone”: On Collection and the Value of Plants

1. How the Covid-19 Pandemic Affected the Plant Market

Large-scale wild harvesting of indigenous flora, which has taken place since at least the 1970s, was mostly perpetrated by local commercial collectors until foreign collectors took over the market around the 1980s (Bruwer, 2023:7). There is limited data on this period, but foreign collectors, predominantly from Europe, Asia, and the United States, are said to have remained at the forefront of the trade until around the time of the Covid-19 (coronavirus disease 2019) pandemic.

The Covid-19 pandemic began in December of 2019. The first cases of the disease appeared in South Africa in March of 2020, leading the government to implement a strict lockdown on the 27th of March (Carlitz & Makhura, 2021:1). Public outdoor spaces, including botanical gardens and nature reserves, were closed to prevent the spread of the virus. Effinger (2022) points to the Covid-19 pandemic as a ‘world-remaking’ multi-species assemblage embedded in the context of the Anthropocene and complex socioecological relationships. For instance, the disease was passed to humans as a result of historically embedded interactions between humans and nonhumans in large-scale animal agriculture (Effinger, 2022:1). The pandemic also reshaped human relationships with plants. For many urban residents, it reconfigured the sites where nature was experienced and cultivated. As domestic spaces became the stage for multispecies encounters, plants shifted from being features of a distant ‘wilderness’ to active participants in everyday care, affect, and wellbeing. Connecting the pandemic’s reworking of plant-human relations to the political economy of the ornamental plant trade thus situates plant poaching not merely as a local problem of extraction but as an outcome of broader socioecological reconfigurations. The social and cultural worlds in which plants have been entangled for thousands of years have transformed at a greater pace than they were able to keep up with.

The spike in demand increased incentives for unauthorised collection from wild populations. For regions like the Succulent Karoo and other semi-arid ecosystems such as Chile and California, where many popular taxa naturally occur, these dynamics exacerbated pre-existing pressures. On the supply side, formal nursery networks and botanical suppliers experienced disruptions (including closures and labour shortages),

which in many contexts pushed buyers and sellers into less-regulated channels: informal online marketplaces, private messaging groups, and cross-border courier networks. The heightened value of rare plants during his time made illicit wild collection an attractive livelihood. The lockdown lasted until the 1st of June 2020. The pandemic affected the trade in plants by forcing businesses across the country to close temporarily. Many local customers neither had disposable income to spend on collecting and caring for plants nor were they able to make purchases in person. The local legal market in the Karoo was impacted negatively as nursery owners lost a significant portion of their customer base. Mirna (Respondent 9), who owned a nursery alongside her husband Jacob, said that “with lockdown, nobody could come out, so it did the market bad, because now nobody has any money anymore” (Respondent 9, 2025). During this time, researchers in South Africa also observed a rapid increase in the number of plants being seized from poachers as local people and immigrants became more involved. This change was attributed to lockdown travel restrictions.

During the Covid-19 pandemic, foreign collectors who were unable to enter the country due to restrictions recruited locals to carry out raids for them. Researcher 1, Olivia, who worked for TRAFFIC (a wildlife trade NGO), collaborated with other wildlife crime organisations on a project that harnessed technology to combat the plant trade and conducted interviews across South Africa. She explained that (Researcher 1, 2024):

Covid had a really big role to play in two ways: prior to 2019, a lot of the interviewees stated that it was foreigners who were coming in for specific kinds of plants, taking a bunch of plants and leaving. And then, after 2019, it actually became locals who were doing the harvesting and sending the plants overseas likely because of the restrictions on movement, but then also taking advantage of the fact that probably anyone would do almost anything for some kind of income.

It was difficult to determine whether the pandemic alone had spurred this change. Researcher 3, Frida, a botanist from the University of Hamburg, further explained (Researcher 3, 2024):

In the past it was a specialist who went to the veld. We know that sometimes even people with a valid permit went to the veld because they did some studies on

succulents, for instance, and then they couldn't help themselves from stealing some from the veld and maybe for their own collection. Stupid enough. But I guess nowadays the majority of people don't have to.

Once collectors could instruct locals on where to find populations that they were familiar with, it removed the need for collectors to do their own harvesting. Overall, it was less risky to send local people, whom collectors and criminal syndicates viewed as disposable.

Like Researcher 1 and 2, Claire also alluded to the shift in harvesters being the result of multiple changes occurring around the time of the pandemic. She was sceptical about the theory that it was simply a result of foreign collectors starting to employ local people to harvest on their behalf. She did not believe that it was “as simple as that”, but indicated that overall, it was difficult to pinpoint and precisely identify what else had changed (Researcher 2, 2024). It was believed that the change to the demographic of harvesters partly had to do with foreigners attempting to shift risk in response to increasing arrests (Bruwer, 2023:7). Respondents in Bruwer's (2023:7) report also suggested that the foreign monopolisation of the rare plant market began to break down when locals caught wind of the value of plants through media reports. It seemed that the effects of the pandemic and travel restrictions were the driving force behind greater local participation.

Researcher 1, Olivia, indicated that foreign collectors and syndicates saw heightened levels of precarity and desperation amongst local people as an opportunity to recruit them and avoid prosecution (Researcher 1, 2024). The pandemic brought widespread job losses, as the number of available jobs fell by more than 2 million (Verick, 2022:8). Unemployment and the probability of discouragement increased across all population groups in South Africa, but coloured men and women in South Africa were disproportionately impacted by the decrease in the likelihood of employment (Verick, 2022:7). Pre-existing inequalities and labour market deficits meant that recovery would be more difficult and uneven (Verick, 2022:4). The collapse of formal and informal employment in South Africa intensified vulnerability, thus arguably driving participation in the illegal plant trade in the Karoo.

The pandemic was identified as the turning point for the illegal plant trade in the Karoo and globally. As the number of seizures of rare wild plants skyrocketed, researchers began speculating about the factors driving this sudden increase in demand.

Olivia wanted to do consumer surveys out of interest in how and why the demand changed so rapidly during the five years following the pandemic. One survey was being designed and conducted by researchers at the University of Cape Town, Sungkonghoe University (Republic of Korea), and the University of Alabama. This collaborative project aimed to develop a large-scale consumer survey tool to analyse demand, focusing specifically on South Korea, which is a leading importer of South African succulents – and co-design an innovative, evidence-based alternative livelihoods intervention. At the *Safeguarding Succulents* workshop, the obsession with succulents was described as ‘mania’ similar to that of ‘tulipmania’. While researchers still require better understanding of consumers, several theories have emerged as to how the coronavirus drove demand.

Firstly, people living in urban areas wanted hardy indoor plants that could improve their mental health, keep them company, and decorate their living spaces while they were spending more time at home. This was said to be especially prominent in Southeast Asia. According to Olivia, “A lot of people in Asia who live in high-rise buildings who don’t have access to green spaces resorted to house plants. There’s no doubt that the house plant trade boomed around the world during this time” (Researcher 1). Numerous studies examined people’s relationships with houseplants and ornamental plants during the Covid-19 pandemic (Effinger, 2022; Pérez-Urrestarazu *et al.*, 2021; Zangeneh, 2022; Carabelli & Lyon, 2025) and observed that individuals developed stronger ties with them in response to experiences of loneliness, isolation, and other social issues. Effinger (2022) found that young people, who were disproportionately affected by generational inequality in access to green spaces, benefitted from the presence of houseplants when their social interactions were limited by the pandemic. Caring for them was associated with relaxation, mindfulness, and overall improvement to individuals’ mental health (Carabelli & Lyon, 2025). Carabelli and Lyon (2025) found that respondents enjoyed the rhythm that plants gave to everyday life. Evidently, the demand for plants rose as relationships with plant kin became particularly valuable for offsetting the effects of the coronavirus pandemic.

Secondly, many people developed a more focused interest in specific species as they gained more knowledge of or appreciation for their individual traits. As Olivia made clear, it was during this time that “you had sort of generalist interests become a bit more specialised [...]. And now you have a much larger group of individuals who are very

specific on maybe the genus that they want or specific species or varieties or rarities” (Researcher 1, 2024). Like other hobbyists and collectors, plant lovers could dedicate more time and attention to their collections during the pandemic because they had more time away from work. Conversations with collectors and casual ‘plant parents’ revealed that, without access to nurseries, they were still able to shop online and view other people’s collections, thus becoming more immersed in the process of collecting. Involvement in plant-centred social media spaces and engagement with ‘plantfluencers’ grew during the pandemic partly because people had more time to spend online (Effinger, 2022:23).

Plant-human relations have long intersected with and been shaped by market forces, digital technologies, and pre-existing patterns of extraction, which coalesced during the coronavirus pandemic into a rare plant ‘mania’, producing a rapid intensification of the ornamental plant economy. Houseplants and ornamentals of all kinds underwent a metamorphosis. Their commonplaceness was overthrown as isolation, claustrophobia, and greater social media engagement had seemingly rekindled the desire for plant companions. Demand rose sharply as people sought to make home environments greener, healthier, and more resilient to the stresses of lockdown. Plants became a visible marker of self-care, amplified by online aesthetics and shareable images of curated collections. They seemed to offer a sense of normalcy and reassurance in a world that suddenly found itself in crisis.

2. Tiny Succulents and Miraculous Clivias

The value of plants is often determined by factors such as rarity and unique characteristics, both of which are shaped either by environmental conditions in the wild or by hybridisation in nurseries. Many of the targeted succulent species were peculiar in both their appearance and their survival strategies, having adapted to living in the Succulent Karoo biome’s extreme conditions. While unusual growth forms may have attracted some succulent collectors – *Conophytum* (Figure 6), for example, are described as greenish thumb-tips, grapes, buttons, or stones – others might have been drawn to the qualities that made them suitable for indoor growing.

Figure 7. *Conophytum*, described as “button plants”, growing in a secure setting.



Photograph by F. Rahl-Botha, 2024. Stellenbosch.

‘Succulence’ is used to describe plants with water storing tissue, an innovation species uses to sustain metabolism and reproduction in drought and water-limiting conditions (Grace, 2019:337). By storing water, succulents act as living reservoirs. In arid landscapes, they are not decorative extras but fundamental components of ecosystem function. Succulents create humid microhabitats with their outer surfaces, and their colourful flowers attract a variety of pollinators. They are also a food source or nesting site for some insects, invertebrates, reptiles, birds, and other small animals. Thus, they support and amplify biodiversity and contribute directly to ecosystem processes such as nutrient cycling, soil stabilization, and pollination networks. The low water usage of succulents makes them ideal for waterwise gardens. They appeal to homeowners because they are promoted as low-maintenance.

Succulents are believed to have the potential to mitigate the effects of climate change (Grace, 2019), but they are also highly vulnerable to its effects. High genetic diversity enables differential responses to drought, disease, and other stressors, allowing populations to persist. Removing individuals through illegal harvesting – which often disproportionately targets the most attractive or rare variants that carry unique genetic traits – truncates the adaptive potential of the population. Frida, a researcher and botanist from the University of Hamburg, explained that because succulent populations are genetically distinct, “if they’re gone, they’re gone, we can’t just plant them out; not in 20 years, not in 100 years”. A single drought, fire or disease outbreak can wipe out a population entirely if human collection has already reduced numbers. Researchers indicated that one of the difficulties conservationists are facing is the harvesting of succulent populations that may not have been discovered by scientists, meaning that by the time the plants are seized by authorities, they may no longer exist in the wild and a portion of the region’s biodiversity has been lost. Anticipated climate change scenarios play a role in increasing the economic value of arid-adapted succulents. According to Grace (2019:341), zones with high succulent species richness tend to overlap with communities that are particularly socioeconomically vulnerable to climate impacts. In these areas, indigenous flora is likely to assume greater significance for uses such as fuel and animal feed, for erosion control and other ecosystem services, and may inspire new approaches to storing and managing water. Illegal harvesting severs ecological links and, from this, socioecological consequences follow: reduced ecosystem services for local people, loss of culturally important species, and a diminished capacity of the landscape to recover from climate extremes.

The promotion of waterwise plants was neglected in discussions about the leading causes of the greater consumer demand for succulents. Kirstenbosch National Botanical Garden has a waterwise garden that encourages visitors to look at efficient ways of using water by improving water retention in soil, adopting different watering methods, and planting specific species such as *Aloe maculata* and *Clivia miniata*. However, promoting waterwise plants may inadvertently lead to an increased demand for succulents and, in turn, more illegal harvesting. This paradox arose in an interview with Olivia (Researcher 1), a researcher for TRAFFIC – an NGO that promotes legal and sustainable wildlife trade. She described an interview in which one participant drew her attention to how waterwise plants may have impacted the plant trade (Researcher 1, 2024):

If we look back, one of the interviewees I spoke to mentioned South Africa's 2015/2016 drought, where the whole of the country and Southern Hemisphere was encouraged to buy waterwise plants. We never thought... you don't think anything of it. You think of an aloe at the shop or you think of a euphorbia or any cacti sitting somewhere. I was like 'my word, you're totally right'. If the whole country was like 'we need to move away from like water heavy plants and we need to start buying succulents'.

It was evident, considering the local drive towards gardening practices that were conscious of water consumption, that more attention needed to be paid to balancing this with the protection of wild succulent species. Waterwise gardening was viewed as a more sustainable option, but articles and information posters in gardens and reserves did not juxtapose it with the need to avoid purchasing wild, threatened succulents.

The Karoo is home to another threatened species coveted by international collectors for its beauty and rarity. The *Clivia mirabilis* is a species of lily first described by Rourke (2002) that occurs in a small area on the border of the Northern Cape and Western Cape provinces – the only place on earth where this species is known to grow. Clivias are typically forest dwelling and dependent on moist environments, but this miracle (*mirabilis*) lily occurs in the semi-arid Karoo (WWF, 2024). The Succulent Karoo receives rain in winter (April to August) (Walker & Hoffman, 2024:6) and average rainfall can be under 150mm annually, making it a highly unlikely environment for lilies to thrive. *Clivia mirabilis* have extremely low chances of surviving outside of their natural habitat (WWF, 2024). Authorities became aware of consumer interest in them in 2023 after a seizure in Cape Town and they continue to be vulnerable to illegal harvesting today.

3. “I was very excited to start this journey”: Plant Opportunities

The ornamental plant industry has grown significantly in the last two decades and source markets have expanded, leading to changing patterns of risk for both importing and exporting countries (Hinsley, 2025:223). The availability of endemic species reduced costs (linked to cheap labour), and less stringent enforcement of environmental law have made South Africa a prime source of ornamentals. However, the country has fallen behind

as a producer of plants, including its own endemic species. Rare succulents are a niche market, requiring growers to dedicate extensive resources and time to cultivating specialised species with no guarantee that they will be purchased, let alone grow. According to Bruwer (2023), the oldest specialist succulent nurseries in the country were established in the 1950s. Today, they struggle to stay afloat without adequate resources, access to permits, and the support of the state and conservation NGOs.

It was important for nursery owners like Mirna (Respondent 9) to be able to do their part in protecting Namaqualand's fragile ecosystem: "I was very...I don't know...excited to start this journey. And I thought I was going to make a huge difference and everything and then you get off to five, six years and then you see you haven't made any difference, which is very sad" (Respondent 9, 2025). Mirna was visibly despondent as she spoke. The nursery that she ran together with her husband, Jacob, was well maintained and stocked with many of the rare species that had been trending during the pandemic, but it was missing some of the flashy newer species seen online and in other nurseries. She explained that it was difficult to keep up with the market and continue supplying the 'flavour of the month' as a small, registered grower.

The plants she had were mostly older species, such as *Conophytum*, that had been popular during the coronavirus pandemic. Mirna explained that *Conophytum* took approximately four years to grow to maturity. The majority of seeds did not grow into adult plants. These were no longer selling at the same rate and it was becoming too costly to water them (Respondent 9, 2025):

So you start you start growing them now, hoping that they're that you will get them. If you have/sow a thousand seeds, you're lucky if 300 comes up and you sell a hundred of them eventually. And what do you if you don't sell them? Do you just keep them alive? And that is a lot of work and a lot of money because you have to keep them watered, you have to spray them for fungi and lice, it's quite a tricky business. Water in Namaqualand is very expensive.

The high levels of water usage associated with horticulture can be detrimental in areas that are already susceptible to drought (Hinsley, 2025:228). It was impossible for Mirna to predict which species would be in demand in the future or to cultivate plants without

any guarantee that consumers would be interested. Had she wanted to sell different specimens, she likely would have had to obtain permits due to new regulations.

Nurseries are required by the Northern Cape Nature Conservation Act 9 and the National Environmental Management Biodiversity Act (NEMBA) Threatened or Protected Species (ToPS) Regulations to register as sellers and acquire permits (Bruwer, 2023:6). The TOPS listing system was a double-edged sword that Claire and biodiversity legislators had to navigate (Researcher 2, 2024):

The problem with the listing of species is they don't want to negatively impact the legal trade because there's a lot of people that also depend on the legal trade, and they've been, you know, doing this for 30-40 years. We have succulent nurseries that are extremely old and so they've taken a knock already with the market being supplied by illegal plants, and so lawmakers are trying their best to not sort of impede them any further. But we do need to reach a compromise in some way.

Small businesses and local sellers in the Northern Cape felt that the listing system impeded the legal trade without having a significant effect on the illegal market. Authorities were aware of this, but TOPS listing were a vital tool for monitoring and enforcement.

Local nurseries struggled to compete with their international counterparts despite adapting to new demands. Claire explained what she had learned from them about how they tried to adapt as the market changed (Researcher 2, 2024):

The nursery owners said this to me when they used to initially export a few live plants: as the illegal market seemed to be saturating the market in general, they started exporting more seeds. And my impression from them is that the overwhelming amount of supply has always been from, for example, Asian countries – they have greenhouses that South Africa can only dream of, so they would import the seeds, grow the plants there, and then supply the market from that side.

Internationally, access to resources was less of a problem for growers, but in the Karoo factors such as water scarcity and frequent electricity cuts (not including periods of loadshedding) made it difficult for nursery owners to maintain steady business throughout the year regardless of consumer demand. Greenhouses, constructed with little more than green shade netting, differed greatly from those pictured on nurseries' social media accounts in Japan or South Korea, where plant 'influencers' frequently posted photographs of immaculate glasshouses and manicured trays containing thousands of ornamental varieties.

Exporting seeds was significantly less profitable than whole plants and it led to South African growers not being able to benefit from the country's own genetic value. The National Environmental Management: Biodiversity Act of 2004 (NEMBA) does not include ornamental plants in its regulations, meaning that entire genera of flowers are traded globally while contributing little to the economy (Reinten *et al*, 2011:935). Claire indicated that "that's where this whole issue of proper access and benefits sharing agreements between South Africa and those countries years ago when they started importing our seeds took place" (Researcher 2, 2024).

It was believed that the selling price of rare plants being traded legally in nurseries in the Karoo may have played a small role in attracting greater interest in the plant market, potentially leading locals towards illegal harvesting. In one nursery in the Northern Cape, for example, single artificially propagated plants were priced in the range of R450 to R1500. Individual court cases over the years revealed the monetary value of wild-harvested specimens, potentially attracting more people to the illegal market. In June of 2025, the National Prosecuting Authority reported the arrest of three suspects who were found transporting protected plant species in contravention of NEMBA and the Northern Cape Nature Conservation Act. The three individuals had been carrying 506 *Monsonia Crassicaulis* ("Bushman's Candle") plants valued at R989 422 and 108 *Euphorbia Braunsii* valued at R479 520.

Artificial propagation presented one possible answer to mitigating the illegal plant trade. Propagated plants are cared for, given special soil and nutrients, and only transported when they are ready to survive. Some indigenous species can only be sourced in the wild because they have not become available in cultivation (Prinsloo *et al*, 2024:27). By increasing the number of indigenous succulents being artificially propagated, South Africa may be able to start supplying the international market, thus

creating job opportunities while simultaneously protecting wild populations (Bruwer, 2023:31).

Claire argued that this alone may not be a sustainable, long-term solution (Researcher 2, 2024):

I have no issue with artificially propagated plants. I mean, even if you look at aloes that are harvested from the wild, that's still a sustainable trade. But we need to arrive at a place where you can do that sustainably. And the problem is: if we are going to rely on plants to employ everyone in Namaqualand then good luck to us.

There were very few nurseries propagating rare plants in the Karoo. In Namaqualand, there were a handful of trusted nurseries growing and selling the species that were currently in demand, but many of them found it increasingly difficult to continue doing business over the years. Serious collectors not only search for bigger and older plants that cannot be found in nurseries, but also prefer wild plants for their unique natural growth forms (Bruwer, 2023:8). Thus, artificial propagation could not satisfy this section of the market.

Cultivation does not automatically remove the pressure on wild plant populations and may have the unintended effect of increasing their harvest (Hinsley, 2025:226). Commercial propagation may have the unintended effect of depreciating the value of succulents and causing nurseries to incur losses in the long run (Bruwer, 2023:32). Currently, scarcity and exclusivity contribute greatly to their value. There is potential for nurseries to begin selling seized specimens, which already have the traits that collectors are after. Claire explained that some nurseries with clean track records had already been entrusted with safeguarding seized plants (Researcher 2, 2024). However, this model may stimulate more demand and complicate compliance by making it more difficult to distinguish between plants that were acquired legally and those that were stolen (Bruwer, 2023:33).

Law enforcement and conservation staff were burdened with caring for thousands of seized plants. Without resources or infrastructure to manage them, they resorted to a triage system to decide which plants should be prioritised and saved (Bruwer, 2023:18). Most seized plants were received and processed in the Western Cape due to limited capacity in the Northern Cape. Many of these specimens had to be housed and cared for

pending criminal proceedings where they were required as evidence, adding another layer of complexity to managing seized plants (Bruwer, 2023:19).

Options for replanting stolen succulents were limited for numerous reasons, which Frida (Researcher 3) highlighted during our interview. She began by explaining that the most straightforward answer as to why replanting is not viable is that “then they would be poached again tomorrow” (Researcher 3, 2025). There was also a practical problem: many plants simply did not grow once they were transplanted and botanists often did not have the opportunity or the facilities to keep them alive for long periods. Since their survival rate was low, she suggested that the better option might be to sow seeds in the ‘good years’, but this would depend on botanists and horticulturists knowing the original location of the population; “you need to know where the seeds are from, from which population, in order not to mess up the gene pool” (Researcher 3, 2025). Finding the original location of confiscated plants was often impossible and it was difficult for individuals to survive and thrive once they had been dug up and replanted somewhere else. Frida further explained how this related to their genetics (Researcher 3, 2025):

We and other researchers that look into the plant population genetics found that some of the species are very specific in their genetics – the different populations are very distinct – and as long as you don't know where they're from and you plant them out, then you mess up the genes. And we assume, for a good reason I think, that the plants that have a distinct genome have it because they're specially adapted to a special environment, and if you ignore that and you plant them, you mess with the gene pool. Then it's very likely that their fitness for that particular habitat gets reduced.

Both the legal and illegal plant trade have had serious consequences for the country's genetic resources and the possibility of local people being able to benefit from propagating indigenous plants.

This was described by Researcher 1, Olivia: “over the last five years, South Africa's lost a lot of the genetic value that we had. Before we were even able to get it out and sell it ourselves it's been taken from us and now it's being artificially propagated in nurseries overseas and they're benefiting from that income” (Researcher 1, 2024). Industrialised countries have long profited from the use of South Africa's genetic material through what

might be described by some as a form of ‘floral colonisation’ (Reinten, Cotzee, and van Wyk, 2011:935). The United States, for example, has commercialised 453 species of South African flora (Reinten *et al.*, 2011:935). Incentivising and empowering nursery owners or horticulturists was seen as a vital step for conservationists to promote the legal trade. Developing a sense of ownership of indigenous plants might also enable locals and nurseries to take back control of the region’s genetic resources, thus bringing economic benefits and opportunities to poor communities.

4. Collection as Salvation: Reflections on Consumer Demand

Houseplant owners and plant collectors are typically identified as millennials in the literature (Carabelli, 2020; Horwood, 2020; Knuth, 2021; Vincent, 2020). As a result, plant poaching is viewed and discussed as a generational issue. Whilst this has been acknowledged by experts, it may have the adverse effect of shifting attention away from the fact that there is a wide spectrum of buyers and collectors across generations. At rare and indigenous plant sales, for instance, the number of young people (particularly millennials) I observed was significantly smaller than the number of older people. Older people made up the biggest group at the *Vetplantfees* and were on rare occasions accompanied by younger people and children who were not seen purchasing plants themselves. Rather, they were drinks or snacks at the bar, looking at art, or sitting outside in the sunlight with their dogs and children. During the auction and veld walk, it was clear that their knowledge of particular species was extensive and had been accumulated over years of collecting. This was further evidenced by their use of iNature and awareness of the use of AI to identify species.

At the *Vetplantfees*, buyers of ornamental plants sought rare, unique individuals that possessed specific qualities. Buyers were particular about the species and traits that they wanted, often taking time to pick a plant from a relatively small selection and leaving with only a few that they had specially chosen. Most people could be seen carrying two to six plants of varying sizes on their way out of the festival grounds.

The act of collecting ornamental plants may be seen as an attempt to simultaneously conform to a trend whilst setting oneself apart from others. The collector projects their identity onto the objects they live with and attempts to distinguish their sense of taste from that of their generation, class, or family (Elsner & Cardinal, 1994:3).

They want taste itself, rather than the physical objects alone, to become the reflection of their individuality and status (Elsner & Cardinal, 1994:3). Because collectors of rare and endangered plants are often driven by a desire to possess the most unique specimens, they are seldom willing to settle for artificially propagated ones sold in nurseries. At the same time, they may place their vocation in the service of conservation – they buy or collect, maintain, and oftentimes crossbreed or cultivate rare plants in hopes of protecting them. In the vast majority of cases, experts believed that a collector’s love for plants led them to harvesting endangered species from the wild, contributing to the loss of biodiversity.

At the Safeguarding Succulents workshop, one researcher suggested that many collectors have a ‘saviour complex’; they see themselves as saving the plants that remain in the wild. Their appreciation for the natural environment thus inadvertently becomes the antithesis of conservation; in the quest to protect and nurture wild species, they destroy the habitat that supports their existence. This form of “collection as salvation” (Elsner & Cardinal, 1994:1) is inherently paradoxical. Collectors of wild plants do not recognise how their well-intentioned behaviour can be destructive because, as experts suggest, they view plants as detached from the wider ecosystem; they do not recognise plants as living beings; they fail to differentiate between plants and animals; and they neglect or disvalue them entirely (Amprazis and Papadopoulou, 2020; Wandersee & Schussler, 1999). Heywood (2017) elaborates on this paradox: many cultures display strong enthusiasm for plants – evident in gardens, urban plantings, homes, and media where they are valued for aesthetics – but there is seldom public appreciation of their role in the natural environment (Heywood, 2017 in Margulies *et al.*, 2019). This phenomenon is typically labelled as ‘plant blindness’.

People living outside of the Karoo, particularly in major cities, struggled to understand why locals described it as a fragile landscape where plant ‘poaching’ threatened to cause mass extinction. Images of ‘poached’ areas in its expansive desert-like environment did not invoke the same sense of vulnerability as the empty patches left by deforestation in forests or open-pit mines elsewhere. Olivia believed that collectors were ignorant of the consequences of their behaviour not only for the environment but also for people (Researcher 1, 2024):

If you're a collector of something, why don't we address the psychology behind that behaviour? Why? Why, if you knew it was harmful to the environment, if you knew that it was fuelling organised syndicates, if you knew communities weren't benefiting, would you still do it? And I think the biggest thing is that is the consumers around the world have total lack of awareness that plants don't always come from a nursery. I think there's this thing that a plant in a pot comes from a nursery and the habitat's never been destroyed and it was ethical. That's the assumption. And I think it's totally fair, but [we're] trying to make sure that people are aware of where they are buying their plants and where are they coming from.

Raising awareness amongst consumers was one of the goals of wildlife trade organisations (Prinsloo *et al.*, 2024:7). Dwarf succulents, clivias, and other plant species did not evoke the same emotional response as rhino or pangolins partly because they were not 'charismatic' species but also due to the phenomenon of 'plant blindness' or plant awareness disparity (PAD).

Participants repeatedly referred to 'plant blindness' in interviews and workshops as one of the problems that conservation organisations must overcome to raise awareness of the illegal plant trade. According to Balding and Williams (2016), humans are more likely to prefer or recall animals due to both biological perception biases and socialisation. PAD is also attributed to stronger feelings of familiarity with animals and animal-oriented systems of education (Amprazis and Papadopoulou, 2020:1067). Olivia claimed that one of the difficulties with implementing new policies is that there is "major plant blindness around the world" (Researcher 1, 2024), suggesting that policymakers may have a bias against plants.

This is backed by Margulies *et al.*, (2019) who argue that flora are largely overlooked in illegal wildlife trade policy, research, and conservation efforts. In laws and regulations governing the trade in plant species, greater awareness of plants may not be enough to ensure that they are given sufficient care and attention. CITES, for instance, contains clauses that do not necessarily prevent legal traders from causing harm or injury to living wildlife (both flora and fauna). CITES relies on state management authorities to decide whether living specimens in Appendix I have been "prepared and shipped as to minimise the risk of injury, damage to health or cruel treatment", without specifying the extent of injury, damage or cruelty that it deems acceptable. In the case of flora,

determining the extent of damage inflicted can be difficult, especially since many succulent species shrivel up and change appearance entirely despite remaining alive, while flowers may appear to be in acceptable condition but not be able to grow once transplanted. This means that plants being exported from the Karoo may be damaged beyond saving once they are shown to authorities or once reach the border, but the Management Authority would not be able to determine whether the exporter is in contravention of the regulations.

PAD is not inevitable, as there are many social groups in which people form strong connections with plants (Balding & Williams, 2016:1194). Balding and Williams (2016) argue for the development of a plant-affiliated culture in which people are encouraged to identify with and show empathy towards plants. Conservation programmes can challenge PAD by collaborating with social scientists to organise activities in which people can bond with plants (Balding & Williams, 2016:1197). A plant-affiliated culture has the potential to reduce the bias that people have towards more charismatic species and foster deeper, more empathetic relationships between people and threatened species, thus reducing the likelihood that people will uncaringly pull up wild plants without considering the environmental impact.

After establishing a pro-environmental attitude and overcoming PAD, there would still be a need to bridge the value-action gap. Park (2020:297) highlights that pro-environmental values are “frequently in tension with self-interest, creating cognitive dissonance and guilt for habits we are unwilling to forego”. One of the common ways of resolving feelings of guilt or dissonance, rather than curbing unsustainable behaviour, is by making biased social comparisons (Park, 2020:297). Arrests have shown that illegal harvesters do not belong to any one demographic (Bruwer, 2023:8), but South African collectors of rare plants and residents in Northern Cape towns deferred responsibility for illegal harvesting to foreigners. People in Nieuwoudtville seemed to describe a phenomenon similar to plant awareness disparity when they differentiated between the practices and beliefs of locals and those of *inkommers* (foreigners). Four interviewees (three of whom were reserve monitors), claimed that ‘locals’ recognise and have a deep appreciation for the plants in their environment. They asserted that, apart from the species of flowers and succulents that they diligently nurtured in their own gardens, local people were overall knowledgeable of and attentive to many of the plants in the surrounding environment. Locals knew species by the common names of the region and

were able to explain their various uses. For example, one woman explained how the women in the community knew to use a particular plant to alleviate symptoms of menstruation, including pain and headaches. They were also accepting of the 'Rastas' and *sakmanne* who harvested medicinal plants. In contrast, they believed that *inkommers* did not possess the same knowledge or care; they wanted money and so were willing to cause harm to the ecosystem. This distinction seemed important to locals because it differentiated them from the people whom they believed were responsible for harvesting seemingly uncaring foreign nationals.

Since the Covid-19 pandemic, conservationists' efforts to draw attention to plants led to increases in funding and the development of teams and action plans specifically dedicated to them. The National Response Strategy and Action Plan to Address the Illegal Trade in South African Succulent Flora, for example, sought to encourage appreciation of the natural world in order to foster voluntary behaviour change (Crouch *et al.*, 2022:18). Part of the Response Strategy was to ensure that communication with target audiences would influence their choices and lead to action by providing them with information (Crouch *et al.*, 2022:18). People may have pro-environmental values yet be unable to act on them if they lack awareness of the environmental impact of their decisions or have flawed beliefs (Park, :294). These efforts to implement educational programmes and raise awareness were evidently aimed at addressing the symptoms of PAD amongst local people. However, their efficacy would depend on locals acknowledging their role in the illegal plant trade.

Chapter 4: “Easy Prey”: Participation in the Illegal Wildlife Trade

1. Harvesters and Resilience of Criminal Networks

Criminal groups vary between institutionalised networks that have been implicated in other illicit trades and more fluid criminal networks that have become increasingly common in transnational environmental crime (Ayling, 2013:69). This was evident in the Karoo, where researchers (see Prinsloo, Burger & Newton, 2024; Bruwer, 2023) found that plant poaching had very close similarities with other illicit trades in the country. Individuals harvesting and trafficking plants were linked to the same criminal networks responsible for rhino horn, ivory, and abalone trading amongst others. Harvesting networks in rhino and elephant poaching evolved over a fairly short period of time from unsophisticated, informal groups and isolated individuals to more sophisticated syndicates that could employ people with different skills, specialised equipment, and well-established connections (Ayling, 2013:75). The plant trade was also connected to drug smuggling. Drugs were not only being shipped alongside listed plants but were also used as payment to local harvesters, exacerbating existing drug problems in vulnerable Karoo communities (Bruwer, 2023:14). These commodities were all moved along common routes through the Northern Cape, Western Cape, and sometimes the Eastern Cape.

The use of well-established trafficking methods and routes enabled criminal groups to rapidly shift their operations and tap into the demand for rare plants without having to build new networks from the ground up. Olivia, who was a researcher and project manager for a leading NGO that specialised in the trade in wild species, outlined how plant poaching was situated within wider illicit trades (Researcher 1, 2024):

Plant poaching as it stands is very similar to other types of wildlife crime. We believe that there’s actually quite a lot of convergence between what’s happened with abalone in the Western Cape and succulent plants in the Northern Cape and Western Cape. We believe that the succulent plant trade became so organised so quickly because those roots already existed. What would happen is abalone and drugs were going up into the Northern Cape as payment and then you have sort of the illegal commodities moving to the hub that is Cape Town to get out of the

country. So quite a few similarities: recruitment of locals, payments in cash and drugs, taking advantage of individuals who are struggling socioeconomically.

TRAFFIC's (2024) report – which used data from interviews as well as seizure and court case data, shop price visits and catalogues – found that interviewees believed that many of the suspected plant poachers already had criminal histories from their involvement in other crimes such as the smuggling of drugs or diamonds and property theft. One seizure in November of 2024 provided evidence of the convergence of illicit trades when three suspects (a woman and two men aged 23, 47, and 56 respectively) were found in the possession of succulents and rhino horn on the R355 road between Springbok and Gamoep. The plants were estimated to be worth R45 400 while the rhino horns were valued at approximately R449 000 (Prinsloo, Burger & Newton, 2024; SAPS, 2024). The links between different types of illicit goods were more prominent at the intermediary level amongst couriers, collators, and safe house managers. For example, an ENACT study found that Chinese intermediaries based in the Cape Town area were linked to ivory, rhino horn, abalone, and drugs (Bruwer, 2023:9). These close connections between plant poaching and other illicit trades in the Karoo allowed poaching networks to remain resilient despite ongoing law enforcement efforts and various changes in the environment.

The sources of a network's resilience will be different for poor populations harvesting for subsistence than for organised criminal gangs. Ayling (2013:69) asserts that both institutionalised groups and smaller criminal networks tend to demonstrate resilience when faced with opposition from authorities as well as changes in social and economic conditions. Criminal groups in the Karoo showed their ability to make both minor and major adjustments to ensure their survival. These adaptations ranged from replacing arrestees to adopting new smuggling routes (Ayling, 2013:70). Since farmers were increasingly being forced to halt succulent propagation due to environmental changes, experts at the Safeguarding Succulents workshop feared that the "farmer gap will be closed by the import of succulents – the closing of the farmer gap by the illegal trade mirrors the closing of the harvester gap (left by arrests) with more poachers".

Arno (Respondent 10), a farmer and Pastor in Kenhardt, compared this to the arrests made for abalone poaching. He told me briefly about his experience diving for *perlemoen* – the common Afrikaans name for South African abalone, a species of sea snail

endemic to the country's coastal waters – during his childhood. He observed that the arrest of one poacher would open an opportunity for another to take their place and make a living (Respondent 10, 2024). People looking for a way into the market had an incentive to hand known poachers over to police or, as he described it, to 'snitch'. Arno claimed that people were always ready to fill the gap left by arrestees, making it easy for criminal groups to replace their harvesters or couriers (Respondent 10, 2025). Claire, who specialised in transnational organised crime, asserted that "for everyone that we arrest and throw into jail for five years, there'll be another one to replace him" (Researcher 2, 2024).

The replenishment of participants in criminal networks can be relatively easy where the market is highly rewarding and barriers to entry are lower (Ayling, 2013:70). Fast rates of replenishment in the Karoo's illegal plant market indicated that these dynamics were present despite slight differences with other wildlife markets. Unlike with rhino horn or ivory, a person would have to poach thousands of plants at once to make a significant profit, which would then be shared amongst the rest of the network. In some towns, members might be less prepared to participate due to better work opportunities. Rigorous enforcement in recent years and longer prison sentences have not entirely curbed the replenishment of illegal market participants. This indicates that factors like destitution and lack of opportunities continue to impact people's lives to such a degree that they are willing to accept increased risks.

Adopting new smuggling routes and strategies to access both human and plant populations was also a common adjustment made by networks. Built roadways are limited in the Northern Cape and sections of the Western Cape, meaning that there are very few alternative options for smugglers wishing to avoid law enforcement. The R27 provincial route running from Vredendal in the Western Cape to Keimoes near the borders of Namibia and Botswana, was one of the routes that they used on their way to the border to avoid the roadblocks along the N7. This road was predominantly used by long-haul truckers and could be exceptionally desolate compared to the busier national roads, making it ideal for trafficking illicit goods. One participant in Nieuwoudtville, which is one of the first towns on the R27, expressed that hitchhiking there was extremely unsafe – especially for women, who are disproportionately affected by violence in South Africa – because it was often used by criminals.

Nieuwoudtville is located a short distance from the top of Vanrhynspas, a mountain pass that climbs 595m on the border of the Northern Cape and Western Cape, where traffic police were sometimes stationed to monitor drivers entering the province. One reserve manager, Petrus, claimed that poachers were dropped off on the side of the road at the bottom of Vanrhynspas close to Bagdad Café (a popular restaurant amongst locals and officials from nearby towns), from where they would hike up the side of the mountain with scarcely the clothes on their own backs and, in rare cases, armed with guns and other weapons. This new strategy made it increasingly difficult for reserve monitors and security forces to monitor and protect the reserve. Petrus claimed that, at the time, him and three other men had to monitor the entirety of the 4000-hectare reserve, an almost impossible task that was becoming increasingly dangerous. A large part of the resilience of criminal networks in the Karoo was their ability to adopt new strategies and constantly evolve in response to greater enforcement. The towns along smuggling routes faced increased vulnerability by being exposed to criminal activity, decreasing their own resilience in the process.

According to Ayling (2013), states should prioritise identifying and reducing the sources of resilience that criminal networks use to ensure their continued survival. Sources of resilience are grouped into two main categories: firstly, the characteristics of the network such as its size, configuration, or leadership structure; secondly, the environments in which they operate (Ayling, 2013:70). Specific environments make it easier for illicit markets to flourish. The concept of “thick crime habitats” may be effective here for understanding how specific environments facilitate crime more effectively. This concept is predominantly used in the scholarship in connection to urban areas in weak states (Ayling, 2009; Ayling, 2013; Felson, 2006) because these areas help offenders move freely, commit a variety of crimes, and recover from setbacks (Felson, 2006:118).

In what ways can the Karoo be considered a “thick crime habitat”? The region has displayed a remarkable ability to host multiple opportunities for crime despite requiring criminal networks to operate over great distances and in sparsely populated towns amongst close-knit communities. New criminal opportunities are constantly being generated not only because new plant populations are continually discovered but also because factors such as poverty, unemployment, and substance abuse drive people towards crime as a way of meeting their needs and aspirations. Interestingly, participants

pointed out the surprising absence of serious crimes – crime was limited to petty theft and vandalism, which many attributed to drunk people and bored teenagers.

Residents in Nieuwoudtville and Springbok identified two types of people engaging in the illegal plant trade. Firstly, there were those who took plants to sell or use in traditional medicine unaware of the environmental impact that their actions had. One tourism manager, Analise, expressed that the core problem with this group was that they were taking the entire plant rather than only taking the pieces that they needed and leaving enough for the population to continue growing. They were preoccupied with the idea of wild plants having better medicinal qualities, not realising that artificial propagation had the potential to yield even better results. Through education and awareness programmes, she hoped that they could learn to harvest sustainably or to grow their own plants.

Secondly, there were recruits who were self-interested and participated in the illegal plant trade because they were ‘greedy’. Municipal officials, law enforcement officers, teachers, members of conservation organisations, and wealthier people more generally were believed to be part of this group. At the Vetplantfees, Ryan argued that “probably the biggest poaching problem is probably more with the locals and, especially, I think festivals like the succulent festival would also feed that need of wanting to do that – and there’s always people that want to do a shortcut” (Respondent 1, 2024). It was believed that some people were inspired to steal plants after witnessing others publicly profiting from the plant trade, regardless of whether they were already employed or wealthy. Janine (Respondent 8, 2025), who was a member of a Communal Property Association (CPA) in the Namakwa District Municipality – where the illegal plant trade was often overshadowed by the destruction caused by the copper mining industry – relayed a story about a local pastor and his wife who were found to be participating in illegal harvesting. Janine had hosted a walking workshop for women in the community, during which they had come across rare wild succulents. The pastor’s wife, who joined the workshop, informed her husband about the plants and he later returned to harvest them. Janine and the other women reported the couple and they later moved away from the area. They expressed strong disapproval of community members who they believed were taking advantage of the area’s biodiversity for personal gain despite having other sources of income.

Locals were not always quick to report illegal harvesting. In other cases, community members seemed to tacitly support local people who harvest plants for subsistence. This was done in two ways. Firstly, respondents suggested that local people were not involved in poaching at all. Secondly, they drew a clear line between ‘poachers’, who they identified to be *inkommers* or foreigners from China (and less commonly Zimbabwe, Botswana, and Mozambique), and Rastafarians or *sakmanne* who used plants for traditional medicine. They did not consider the actions of the latter group to be ‘criminal’, thus highlighting another issue in understanding participation in criminal networks, namely that definitions of crime are highly contested. These residents seemed to become unwitting facilitators of crime. Tacit support might arise as a result of the visible financial benefits that poaching offers, which often outweigh the income that residents receive from legitimate employment or state grants.

While long-established links, adaptation strategies, and tacit support from communities increased the resilience of criminal groups in the Karoo, conservation authorities also used their awareness of these links to their favour. Lessons from other illicit trades and decades of research on criminal networks provided them with the tools to manage plant theft. Ayling (2013:76) suggests that government supported schemes are an integral part of dissuading local people from participating in wildlife crime. Providing alternative sources of income lessens the support that they have for criminal networks. These alternatives must not only be equivalent in value but also be sustainable. Employed people, such as the reserve monitors, found that their limited sources of income failed to compete with the potential earnings they could accrue by participating in wildlife crime.

2. Socioeconomic Inequality

Economic inequality in the Karoo has complex links to crime and conservation conflicts. Poverty as material deprivation remained a key motivating factor behind the illegal plant trade, meaning that analysing socioeconomic conditions and needs was one of the primary concerns for researchers and conservationists. Locals resorted to harvesting succulents and other plants as a source of income, which enabled them to improve economic conditions for their households and decrease their future vulnerability. They often resented the harsh penalties imposed for harvesting, believing that authorities and the state were punishing them for trying to survive in a world where opportunities were

few and far between. Succulents were seen as intertwined with their history and heritage, but their access to them was limited by conservation and lack of access to land. Farmers and landowners, the majority of whom were white, were seen as having the freedom to profit from (or even destroy) the flora and fauna on their properties while poor black and coloured residents, who were still experiencing colonial and apartheid legacies of dispossession and inequality, were excluded from the market. High levels of unemployment created a recruitment pool from which criminal syndicates could draw new members. Although less common, self-interested economic motivations were also present. Lunstrum and Givá (2020:6) assert that the economic drivers of plant trafficking do not emerge solely from precarity amongst recruits or from the wealth of consumers, but rather from the vast gap between them. Considering that recent penalties for illegal plant trading seem to have shifted up as far as fifteen years, there is a higher chance that people who are convicted will be removed from their households for an extended period of time, potentially worsening precarity by removing working-age people who could contribute to household income if offered better opportunities.

To counteract the recruitment of locals, conservation organisations established programmes to employ and incentivise them. The impact of these programmes was limited and has yet to be quantified, but collaborations between organisations and Karoo residents had a number of positive results including: raising awareness of illegal harvesting; developing a sense of ownership over indigenous flora; improving the relationship between NGOs and residents; encouraging community conservation; and forming deeper understandings of local needs. Socioeconomic drivers of the wildlife trade have not always been accounted for in national and international regulations such as NEMBA and CITES, but experts have more frequently adopted approaches that focus on addressing needs and reducing harms in recent years.

Several overlapping elements increased the likelihood that people would join criminal networks and participate in illegal harvesting. Poverty and livelihood precarity not only created an incentive to participate in the plant market but also shaped everyday decision-making, social relations, and the ways in which people interacted with ecosystems. Many households depended on irregular employment, social grants or, in rarer cases, subsistence farming and the sale of traditional medicine. During the Covid-19 pandemic, household resilience was sharply reduced and illegal harvesting became a response to an immediate need. When predictable income evaporated, the relative payoff

of harvesting succulents rose. Picking and selling succulents required little to no capital or investment. Locals may have already been aware of plant populations. As Claire explained, people who grew up in the area of Namaqualand would have been ideally positioned during the boom to harvest plants because they had “better insight into the veld” than people who were driving and “[had] time to walk through the veld” (Researcher 2, 2024). Familiarity with wild plants had already enabled Rastafarians and traditional medicine practitioners to profit from the Karoo’s natural resources by acting as intermediaries and collaborating with syndicates (Prinsloo *et al*, 2024:23). The ability to identify species became a more monetizable skill that ordinary people could draw on when demand increased.

However, local harvesters received only a fraction of the final prices compared to middlemen and syndicate leaders, thus reinforcing dependency and resentment. In this way, participating in plant theft allowed locals to earn enough of an income to get through the month but not to escape poverty or experience social mobility, thus keeping them in a cycle of crime. Nursery owner Mirna explained the exploitation that people in Namaqualand experienced at the hands of large syndicates: “I don't know if you've checked the local news, they catch the guys with truck loads full of plants – those 50 kilogram of bags are full of plants – and then [the syndicates] pay the guys that go and pick them a hundred bucks, so they make a lot of money out of the local people, because the local people are poor” (Respondent 9, 2025). That R100 could be decisive for an individual or a household was indicative of the depth of the problem. Despite syndicates drastically underpaying harvesters, cash was an attractive incentive for people struggling to bring in an income. These payments were not sufficient to cover household needs and wants, creating further dependency on crime and making it difficult for harvesters to get out of the illegal trade without access to further opportunities.

Hubschle and Shearing point to the exclusion of local communities from the economic benefits of conservation as one of the factors that makes people less willing to support conservation efforts or even drives them to participation in illicit economies such as rhino poaching (Hubschle & Shearing, 2018). In the fieldwork for their study on rhino poaching, they found that people were predominantly driven towards the illicit wildlife trade as a result of economic marginalisation, disempowerment, the desire for economic freedom, and conflict with authorities (Hubschle & Shearing, 2018:18). Frida explained

that many of these same issues influenced Karoo communities to not only steal plants but also participate in other criminal activities (Researcher 3, 2025):

The major driver is poverty in Namaqualand; so unemployment and the dire need of an income. And there is easy prey. It's an easy way of earning some bucks. I mean some people go digging in former diamond fields and risk their life for that and other people go for succulents.

She thus implied that, as with other illicit activities, people were naturally taking an opportunity that was presented to them. Despite being a small deterrence for people considering illegal harvesting, Frida believed that criminalising the plant trade “doesn’t help the people that actually do it because they don’t have a lot of opportunities” (Researcher 3, 2025).

Rather than pushing people away from the trade, stricter regulations increased the risk of poor harvesters facing criminal charges despite international collectors facing no penalties. There was thus a perception amongst locals that the burden of compliance was being shifted onto those with the least power. Frida explained that “what’s unfair is that at the end of the day, it always hits the wrong people. The real culprits always go without any problems” (Researcher 3, 2025). When state regulations treat all harvesters and users of natural resources equally rather than imposing harsher penalties on syndicates, it can have the unintended effect of alienating local stewards and inadvertently undermining community conservation. Perceptions of injustice are important because they fuel participation in criminal acts and drive a wedge between conservation and communities.

Employment is not only a source of income, but a source of self-respect and fulfilment that prevents experiences of individual deprivation and shame (Fischer, 2014:11). Experiences of isolation, resulting from a sense of humiliation at being unemployed, corrode social relations (Fischer, 2014:11). There is potential for the conservation sector in Namaqualand to provide opportunities for expanding people’s livelihoods. Although these would be limited by factors such as time and geographical isolation – considering that the region is a considerable distance from major tourist centres (Schmiedel, 2010:113), this would be an effective way of providing residents with employment that could keep them out of poverty. Initiatives to employ community

members in reserves and encourage greater involvement in conservation had a largely positive impact.

One resident who worked in the tourism sector, Aletta (Respondent 4, 2025), spoke proudly when she told me that her son worked in security for a reserve. She expressed her belief that SANBI, WWF, and other organisations in the area were putting significant effort into providing opportunities for 'jong mense' (young people) in the community. She explained that the reserves were training local people to protect plants and recruiting youth from the town to participate in the programme. This was confirmed by conservationists who claimed that it was an effective way of getting young people involved in efforts to protect plants. Increasing community participation in conservation benefitted actors across the board whilst bringing additional sources of income into struggling households. Reserve monitors in Nieuwoudtville, who played a vital role in protecting indigenous plants, expressed their satisfaction with the opportunities they were given to work within the reserve. Throughout the day the monitors, whose bright orange vests made them stand out against the backdrop of stone buildings and red-brown gravel roads, could be seen walking in groups through the town on their way to and from Oorlogskloof Nature Reserve. Most of the monitors were young coloured men and women, some of whom had children and toddlers with them while they were not working.

Reserves could not guarantee that employees would have work throughout the year and the system of employment appeared to work on a rotational basis. This ensured that opportunities were provided to more individuals, but it meant that monitors and security personnel may not have had long-term employment. The low wages paid to wildlife guardians do not necessarily disincentivise them from participating in wildlife crime to supplement their income (Hübschle, 2016:437). This form of community beneficiation initiative had a limited impact on livelihoods. Monitors did not find the type of work provided by the reserve to be sustainable in the long term; it was exhausting work that required them to be exposed to the sun for long hours. However, they described it as 'adventurous' and 'fun' because they could explore the reserve while learning about biodiversity and conservation. Learning to identify plants and expanding their knowledge of the ecosystem was cited as one of the most enjoyable aspects of monitoring.

One reserve monitor, Rosalie (Respondent 5, 2025), had just returned from her shift at the time of the interview. She invited me to speak to her while she sat with some

of her colleagues, who were also monitors. Rosalie brought different aspects of life in Nieuwoudtville into focus. I asked her about some of her hopes and dreams for the town (Respondent 5, 2025):

We would like to have a Pep here. [At the moment] we must travel to Vredendal or maybe Calvinia and we must hike, it's very unsafe. Now you must pay R800 to go to Vredendal to buy some clothes. We don't have that type of money. We are only paid R2000 a month, so what must we do? So we would like to have a Pep here by us.

The other women affirmed this, conveying a deep sense of frustration that seemed to stem not only from the absence of a particular store, but from a broader lack of access to the goods and services that structure everyday life for most South Africans. They believed that access to affordable everyday stores would greatly benefit the town and improve their standard of living. Pep is a South African retail chain with around 1800 stores offering affordable clothing, homeware, and cellular and financial services. These stores are considered ubiquitous by most South Africans – their blue and yellow branding part of the visual landscape of small towns and urban centres across the country. In Nieuwoudtville however, there were no similar outlets; the closest were in Vanrhynsdorp, Vredendal, and Calvinia. In a town with no formal public transport system and where most residents did not own vehicles, reaching these stores often involved hitchhiking or paying exorbitant amounts for a taxi.

Rosalie went on to say that residents also want more banks, “we only have one bank here, one ABSA, and it's not right because when this bank is closed people must go into Calvinia or Vanrhynsdorp to withdraw money” (Respondent 5, 2025). For individuals earning as little as R2000 per month, bank costs and transport costs were proportionately large. Exclusion from formal financial channels, as a result of having limited banking options, undermines opportunities for saving, access to credit, and participation in broader economic activities. For those receiving state grants, the absence of banking options limited their ability to deposit their money into an account if and when they preferred. Deficient services essentially narrowed residents' ability to choose.

At the time of writing, the businesses in the town were limited to one supermarket (Spar SaveMor), a butchery, a few restaurants, a hardware store, and various public

service facilities such as a library and post office. During my time in the town, I visited the Spar daily to pick up snacks, water, or ingredients for meals but found that it was often understocked, forcing me to drive to Calvinia to pick up additional items; the drive took over an hour one way depending on roadworks, which were ongoing throughout the year. The necessities of clothing and homeware like cutlery, crockery, and bedding, and the ordinary items and appliances that make day-to-day living easier were not readily available in the town. Rosalie and the other monitors could not afford to spend scarce funds on costly transport to and from any of the surrounding towns, meaning that they were often limited to the few products they could find locally or had to go long stretches between purchases.

Conservation policy around the globe often revolves around economic definitions of poverty and the idea that people hunt, steal, or exploit wildlife because they are materially poor, leading to interventions that seek to provide paid employment or alternative income generation schemes (Duffy *et al.*, 2016:16). Mirroring national approaches, local governments and conservation organisations in the Karoo generally start from an assumption that greater access to resources and public goods are the primary solution to curbing the illegal plant trade. What was at stake for Nieuwoudtville's residents was not merely the ability to earn income. Sen (1999) asserts that poverty, poor economic opportunities, systematic social deprivation, and neglect of public facilities are sources of unfreedom (Sen, 1999:3). Economic opportunities, political liberties, social powers, good health, basic education, and other initiatives influence what people are able to achieve (Sen, 1999:3). Foster *et al.*, (2013:1) further define poverty as "the absence of acceptable choices across a broad range of important life decisions – a severe lack of freedom to be or to do what one wants". Regardless of whether Nieuwoudtville residents had the formal right or financial means to lead the type of lives they desired, they seemed to lack the 'real freedom' or capability to do so; they did not have substantive or real opportunities (Byskov, 2017; Byskov *et al.*, 2024; Sen, 1985). It appeared that economic unfreedom robbed Rosalie and the women in her community of the opportunity to participate in the market in the ways in which they wanted to, or to define their future and daily activities. For Rosalie, an increase in her monthly income, which was R2000 per month (less than half of the median monthly income in South Africa), would not necessarily be converted into real opportunities and achievements; she would still not

have the freedom to spend her income and access goods and services in her immediate environment without, for example, public transport or a car.

Nieuwoudtville resident's collective wish for retail stores, banks, and employment opportunities that could meet their needs painted a vivid picture of everyday hardships in the Karoo and reflected deeper social and economic issues. The lack of access to affordable retail goods, public transport, financial services, and other amenities seemed to curtail their freedom to choose, to provide for their families with dignity, and to participate fully in social and economic life. Rosalie further highlighted the danger of hitchhiking for women and relying on strangers to travel. The absence of safe, affordable, and reliable transport was not merely an inconvenience, it was a profound constraint on mobility and freedom. The fear of unsafe hitchhiking further confined the women of Nieuwoudtville more tightly to the immediate town and its limited infrastructure, arguably making them and their dependents more vulnerable to becoming involved or complicit in criminal activities that offer them safer opportunities for mobility. It is in this context that illegal harvesting emerged as a means of acquiring different types of freedoms that people may otherwise not have access to due to their socioeconomic background. To combat this, it is important for conservation organisations and the state to consider what people are able to do and be with the resources available to them and make opportunities feasible.

Jocelyn, who was also a monitor, went on to explain that "The children [in Nieuwoudtville] don't like to go to school, so work must come into here" (Respondent 6, 2025). Her wish for more work for the young people in the town was echoed repeatedly by other residents and researchers. As Frida expressed, "what do you do in the Northern Cape? There's nothing" (Researcher 3, 2025). Residents and conservationists who worked in the area found that young people felt demoralised knowing that there were few opportunities to find employment regardless of whether or not they stayed in school. Young people seldom considered higher education as an option. The perceived absence of economic opportunities seemed to undermine the value of education. Sonwabile, a conservationist who lived in Nieuwoudtville during his time as a reserve manager, believed that more formal education programmes were needed: "there is a gap for youth: they are blank when you approach them about the environment, it's like you're speaking a foreign language. We need to work with the surrounding schools to build future environmentalists" (Conservationist 1, 2024). Shifting interest amongst young people

towards careers in environmental sciences or ecology would open more doors for them whilst positively impacting the environment. Exposing young people to local, environmentally positive opportunities and empowering them to obtain the skills that these jobs require would potentially lead to illegal harvesting becoming less enticing.

Additionally, it was believed that people, and particularly children, lacked role models or mentors whom they could look up to throughout their lives. Olivia was concerned that people in remote Karoo towns had few people in their communities who they could look to as positive examples: “right now the role models are the guys who are doing the illegal work, who are walking around with all the fancy stuff because they get paid” (Researcher 1, 2024). Seeing how wildlife crime allowed others to accumulate wealth and engage in conspicuous consumption may have played a role in motivating young people to join criminal networks.

If, as researchers like Olivia and Claire suggested, many of the same networks and individuals involved in the rhino-horn trade are also responsible for stealing plants, then it is likely that similar gender dynamics can be observed in both markets. Rhino poachers experienced shame, emasculation, disempowerment, and frustration at not being able to support their families (Hübschle & Shearing, 2018:17). Norms of masculinity had a prominent role in driving interest in poaching in a context where economic opportunities were limited (Massé *et al.*, 2021:210). Rhino poaching allowed kingpins and poachers to have purchasing power and to use their income to throw parties (where they shared food and alcohol) or to build shops and infrastructure, which in turn improved their social standing (Hübschle, 2016:438). Communities benefitted indirectly from this (Hübschle, 2016:438). Men were able to take on the functions of social welfare and community development with their income (Hübschle & Shearing, 2018:17). Illegal harvesting alone had yet to offer the same extraordinary wealth as rhino poaching, but it allowed men to experience upward mobility and freedom (Lunstrum & Givá, 2020:4).

Francis, a reserve manager who worked for the Northern Cape’s Department of Environmental Affairs and Nature Conservation, claimed that the factors driving the action of poaching go beyond poverty and material deprivation: “It can’t be solely economic, there has to be something else to it. There’s a driver behind it, that need to poach” (Conservationist 2, 2025). She believed that the plant trade would only end if researchers could find a way to address self-interested economic motivations. Providing alternative forms of employment for poor communities in the Karoo would not be

sufficient because many of the people involved were not purely motivated by profit, “They don’t care about the income but they want other stuff” (Conservationist 2, 2025). She claimed that there was a generational divide in terms of what drove people to participate in the plant trade. Where older people may have engaged in harvesting as a matter of survival or to supplement their pensions, for young people “dis om te gaan party” (Conservationist 2, 2025). Francis thus implied that there was a group of young adults for whom illegal harvesting was a means of funding a particular lifestyle; this source of income gave them greater access to social gatherings and the potential to experience a deeper sense of belonging amongst peers. Young rhino poachers had similar individualistic motivations such as self-realisation (Hübschle, 2016:439). The pressure on youth to maintain these lifestyles drove further participation in illegal harvesting. It was for this reason that Francis believed that the immediate concern of researchers should be to “get behind the psychology” of illegal harvesting before developing new strategies to address it (Conservationist 2, 2025). Moving beyond economic explanations required attentiveness to the generational gap in motivations.

The party lifestyle of young people was linked to substance use and abuse. Influxes of cash into communities can contribute to alcohol and drug consumption, as well as prostitution (Hübschle, 2016:438). Bruwer (2024) found that drug use increased as a result of increased cash flows. Olivia explained that payments in cash and drugs were already common in other types of wildlife crime and had simply continued when syndicates switched to plants. The flow of drugs into communities contributed to precarity and dependence on wildlife crime. Respondents in Nieuwoudtville reported that drugs such as *dagga* (cannabis) were one of the community’s biggest problems. Jocelyn, a reserve monitor, expressed that “it’s a big problem, the drugs here – it’s local people, it’s our people who sell drugs” (Respondent 6, 2025). Another monitor, Dana, explained that “they even sell drugs to children” (Respondent 7, 2025).

Claims about young foreign men in Nieuwoudtville being able to open shops or rent houses pointed to them being able to achieve upward mobility and some financial freedom. However, some residents indicated that they were robbed of opportunities and exposed to vulnerabilities by the influx of foreign nationals to the town, whom they claimed were responsible for illegal harvesting. Dana claimed that foreigners came to Nieuwoudtville and surrounding towns and opened shops while there were others who “come stay here and want to rent your house and at the end of the day they put you out

of your home” (Respondent 7, 2025). This experience of economic exclusion and social unease at the presence of *inkommers* frequently came up in conversations. Dana also suggested that there were foreigners who would move to the town and marry a ‘local girl’ who had a small income or inheritance and then start a business with her money (Respondent 7, 2025). Young women who inherited or retained small assets were cast as vulnerable; their relationships were portrayed as vehicles for outsiders’ economic entry. These claims were entangled with real anxieties over survival in small Karoo towns as well as the scapegoating of foreign nationals. The perception that ‘outsiders’ could access capital, secure property, and establish businesses in ways that many locals could not is not only an economic concern but also a symbolic one, challenging residents’ sense of belonging and entitlement to scarce resources. Young people, already demoralised by few employment opportunities, may absorb and repeat stories that point to outsiders as the proximate cause of their precarity. Long-standing residents, especially those with limited savings or insecure tenure, felt bypassed by informal circuits of investment and credit that outsiders may more readily access. Symbolically, the figure of the *inkommer* functioned as a foil against which local claims to entitlement, belonging and historical residence were asserted.

TRAFFIC’s findings contradicted the claims made by participants in Nieuwoudtville about foreign harvesters, suggesting that most harvesters were South Africans (Prinsloo *et al.*, 2024:22). Regardless of whether foreign nationals were moving into Karoo towns and impacting social and economic dynamics, they were not necessarily involved in harvesting. Rather, foreign nationals from Namibia, Zimbabwe, Saudi Arabia, China, Pakistan, and other countries were more involved in other areas of the plant trade. TRAFFIC found that South Africans were less likely to act as exporters, organisers, financiers, and syndicate leaders (Prinsloo *et al.*, 2024:23). Nonetheless, community members had a notable perception of foreigners being at the core of illegal harvesting. For conservation and governance, these perceptions carry practical consequences. Firstly, when social cohesion frays and suspicion of outsiders rises, cooperative ventures that require trust, such as joint monitoring, become harder to implement. Locals may resist external conservation actors regardless of the benefits they might bring. Secondly, misdirected blame can obscure the policy failures that fuel illegal harvesting: if residents believe the problem is foreigners taking advantage of natural resources and connections to locals, attention shifts away from remedying unemployment, insecure tenure, and lack

of education or training – the very conditions that make illegal harvesting an attractive fallback.

Claire expressed her wariness of simultaneously deferring blame away from locals who were part of the poaching problem and perpetuating problematic narratives that hinder progress (Researcher 2, 2024):

I'm always very cautious of labelling everyone as a foreigner because people love that narrative, when really the majority of people, I'm pretty damn sure, are still locals. Although there is of course foreign involvement. To me it also just sounds like a reflection of the general sort of diaspora that we have in South Africa.

She offered a more nuanced counterpoint to the prevailing narratives, highlighting how a prevailing fixation on foreign involvement (which also came through in media reports and posts) served as a diversion from addressing complicity. Claire gestured toward the country's broader patterns of mobility; the presence of foreigners in Karoo towns was generally a result of the movement of people seeking work, safety, or opportunity across provincial and national boundaries. Her statement also situated Nieuwoudtville's tensions within a wider post-apartheid geography of displacement and migration (Researcher 2, 2024). This recognition calls for an understanding of illegal harvesting as embedded in shared socioeconomic vulnerabilities that cut across definitions of 'insiders' and 'outsiders'. Claire's insight thus challenged both exclusionary narratives and the moral distancing they enabled.

The ideas put forward by residents and conservationists about the motivations for harvesting complicated economic explanations of the illegal plant trade by foregrounding aspiration, status, and sociality as motives that coexist with, and sometimes override, subsistence needs. The socioeconomic picture of the Karoo revealed that plant harvesting was less of an aberrant crime than a predictable response to economic inequality and structural violence. Widespread unemployment, constrained access to goods and services, weak local markets, and the absence of realistic livelihood pathways pushed households toward low-barrier income options such as harvesting. Young people's participation was viewed as oriented toward present-focused consumption and recognition. Community beneficiation initiatives showed promise. Addressing the tangible, immediate needs of Karoo communities was the most feasible meantime

solution at the height of the crisis and communities benefitted from the opportunities that were created by conservation organisations. Locals expressed feeling incentivised to protect biodiversity and appreciated the opportunity to earn an income from working in nature. These initiatives unfortunately could not entirely displace the factors that drove people to participate in the illegal trade. If part of the drivers towards participation in the illegal trade are aspirational rather than purely economic, then interventions that focus only on creating economic alternatives may have limited effect. Initiatives that improve employment and educational opportunities, give locals greater access to goods and services, and encourage youth to look at alternative options remain central to reducing incentive to participate in illicit activities.

Chapter 5: Crime and Punishment

1. Biodiversity Regulations

Stringent biodiversity laws governing the plant trade in South Africa risk perpetuating and amplifying structural violence and exposing poor recruits and their families to greater harms. Following the escalation of the illegal plant trade following the Covid-19 pandemic, biodiversity regulations and laws became increasingly strict, leading to harsher sentences for role players. The shift from fines to jail sentences seemed to decrease the number of incidents and arrests, pointing to the efficacy of stricter legislation. However, this shift deflected attention from the structural drivers that produced low-level harvesters in the first place and from the transnational networks that capture the greatest share of value. In an interview with Frida, she said that it was unfortunate that the criminalisation of poaching was required to raise awareness of its gravity and to keep people away from it. Far from simply deterring harm, punitive approaches frequently displaced blame onto the most vulnerable and entrenched local distrust of conservation authorities. Scholars have proposed alternative approaches to wildlife crime, such as the socioecological harm reduction approach (Hübschle & Margulies, 2023), that may mitigate the effects of more stringent legislation.

Legislation is considered by experts in and around the Karoo to be the most powerful tool in the fight against the illegal plant trade. Although South African wildlife crime laws and implementation have improved since the Covid-19 pandemic, one of the obstacles faced by conservation authorities and law enforcement is the country's inconsistent legislation, which often prevents them from successfully intercepting and prosecuting suspected poachers. Outdated national, provincial, and municipal laws and by-laws have created gaps that poaching syndicates can slip through and South African authorities do not have jurisdiction to pursue known poachers across borders, requiring them to seek collaboration with neighbouring and importing countries.

Regulations governing the flora trade take on vastly different forms across the globe, providing CITES signatory states with a range of examples on which to model their national legislation. Countries such as the United States have shown that the vulnerability of both threatened flora and the populations affected by their trade are directly related to the strength of national and international legislation. The drafting and implementation of new wildlife trade laws is a contested and time-consuming process where the urgency

of addressing the current ecological crisis comes up against the complexity of maintaining human dignity. It is imperative that new laws are codesigned to account for not only the perspectives of ecologists, lawyers, biologists, and social scientists, but also the needs of the people directly affected by laws regulating the use of natural resources. Strong legislation does not necessarily close markets, highlighting the need to look beyond the law as the answer to the plant poaching crisis. Combining legal tools with knowledge from actors who are less visible could provide a more nuanced strategy. This chapter will examine environmental legislation and enforcement, situating observations from the Northern Cape within broader debates about wildlife trade regulations. This will be followed by an analysis of the permit system and its application in the Karoo. Lastly, I will discuss the growing online wildlife market and the intersections of crime and technology in South Africa.

The 1975 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which operates at a macro-level, is the core legal framework regulating the global wildlife trade. In 2017, 183 countries had signed and ratified the convention (Lavorgna *et al.*, 2018:271). CITES is the most powerful biodiversity conservation convention and remains essential for protecting wildlife. The Convention does not allow for criminal punishment, meaning that it must be reinforced by national legislation. CITES is divided into three Appendices: Appendix I for threatened species, the trade of which is prohibited because it would result in their extinction (certification is needed for artificial propagation); Appendix II lists species whose trade would lead to extinction if left uncontrolled and includes look-alikes (trade in wild plants is allowed with permits); Appendix III is for species protected by individual countries who are seeking co-operation from other parties (certificates are needed for trade in wild plants) (Sajeva *et al.*, 2007:81).

Whilst CITES Management Authorities are responsible for licencing, Scientific Authorities advise them on how species are affected by trade (Lavorgna *et al.*, 2017:271). Many of the parties use botanic gardens to rescue confiscated plants and guide Management and Scientific Authorities (Sajeva *et al.*, 2007:82). Institutional connections help to bridge scientific knowledge and enforcement practice, but they depend on sustained resourcing and clear protocols for custody and long-term care of seized specimens. States are responsible for developing their own regulations to enforce the Convention and prohibit trade in listed species and are required to compile annual

reports. CITES is not ‘self-executing’ (Lavorgna *et al.*, 2017:272), meaning that without national implementation and enforcement, listings alone cannot protect wildlife (Prinsloo, Burger & Newton, 2024:40). CITES countries have their own environmental policies, ethical value judgements, and historical factors to take into consideration (Lavorgna *et al.*, 2017:272).

CITES provides the indispensable international scaffolding for regulating the wildlife trade, but its protections are only as effective as national laws, implementation, and enforcement capacity. Like the United States, South Africa has been involved in the CITES process from its earliest days as one of the first countries to ratify the Convention in 1975. The Department of Forestry, Fisheries and the Environment (DFFE) is South Africa’s CITES management authority, acting as an intermediary between the Secretariat and provincial management authorities (DFFE, 2025). The DFFE regulates environmental laws and employs specialised enforcement units in each province. South Africa’s legislation on the illegal plant trade is fairly comprehensive, with high penalties up to R100 000 and up to ten years of imprisonment for offenders (DFFE, 2025), but plant smuggling remains significantly more difficult to detect than other illegal activities. The National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA) is South Africa’s primary national law governing biodiversity conservation. Biodiversity and conservation were previously managed predominantly on a provincial basis. This fragmentation was addressed by the enactment of NEMBA, which uses the Threatened or Protected Species (TOPS) Regulations 2007 to regulate activities involving indigenous species. The DFFE, TOPS, and high statutory penalties create a seemingly comprehensive legal regime, but practical constraints – including limited customs capacity at the borders, insufficiently trained personnel, and prosecution challenges – blunt its effect. The listing system has also not kept up with the rate at which wild populations of plants are harvested and cleared.

Given that CITES relies on robust national enforcement and the continuing fragmentation of the legal system, experts put particular focus on enabling departments and actors within all sectors to deal with illegal plant trade cases. In a workshop, one detective with the South African Police Service pointed to an urgent need to give prosecutors the tools to address the trade effectively: “Who is going to court? It’s the prosecutors. We need to empower them; we need to make them understand this thing”. Preventing misinterpretation of the law – particularly in cases where magistrates are

required to understand taxonomy specified in legislation (Prinsloo *et al.*, 2024:41) – and incentivising lawmakers to fight for indigenous plants was viewed as a vital step in ensuring their protection.

The DFFE deems it virtually impossible to monitor all of South Africa's roads, railways and air traffic simultaneously to prevent the smuggling of wildlife (DFFE, 2025). Roadblocks were the first line of defence against couriers and other intermediaries. During scoping trips and fieldwork, I was pulled over several times by police conducting routine checks on the N7 to and from Springbok. The roadblocks were typically much larger than those in the Western Cape (with more than four police vehicles parked off on the side and lanes blocked off with traffic cones) and were a joint effort between the traffic police and South African Police Service (SAPS). Occasionally there were trucks being thoroughly searched. In recent years, organisations like the Endangered Wildlife Trust (EWT) provided greater support at roadblocks by using canine units to detect illegally harvested plants. Since 2023, the EWT Conservation Canine Unit has been working with the Drylands Conservation Programme to train scent detection dogs capable of locating individual species to assist with screening parcels and vehicles in roadblocks (Matthew, 2025). They reported successfully assisting law enforcement to make nine arrests within the first two months of the deploying the dogs (Matthew, 2025).

According to researchers, traffickers change their routes frequently to avoid law enforcement, who are subsequently forced to adapt and alter their strategies. Olivia outlined that “the main road in the Northern Cape is the one that has been policed the most; the N7 from Cape Town to Springbok is where all the seizures have happened because of the roadblocks that are set up on that road for variety of crime” (Researcher 1, 2024). Because of these roadblocks, traffickers began using alternative routes such as the R27 to get to the border where they could smuggle goods out of the country. Nieuwoudtville is one of the first towns on the R27 provincial route running from Vredendal to Keimoes. The road connects the N7 to the more central towns of the Northern Cape as well as the N14. It is predominantly used by long-haul truckers and can be exceptionally desolate compared to the busier national roads. Nieuwoudtville is located a short distance from the top of Vanrhynspas, a mountain pass section of the R27 that climbs 595m on the border of the Northern Cape and Western Cape, where conservationists claimed that syndicates could drop harvesters off at night to climb the mountain in search of the rare flowers that grew there.

Olivia clarified that the roadblocks were used to monitor a variety of illegal goods, including drugs, and other CITES-listed species. Because these stops led to a significant number of seizures, her and others believed that smugglers were moving their operations elsewhere (Researcher 1, 2024):

I would say people are watching law enforcement and they're changing their modus operandi as a result, so there's no doubt that there would be knowledge of operations that are happening in certain areas, so they'd avoid that area. I think a lot of the time they're relying on the fact that the landscape is so big, the chances of them being caught are really slim. If it's not a state protected area, if it's not SANParks, if it's not a private farmer who's got private security, the chances of people being caught are slim.

One disadvantage of making conservation efforts more visible is that this allows syndicates to learn and adapt quickly. In Nieuwoudtville and Springbok for example, plant theft was frequently committed at night when it was more difficult for law enforcement to respond in time or set up roadblocks. Other experts also echoed Domonique's concern that the sheer vastness of the Karoo gave poachers an advantage over law enforcement. The Karoo covers almost one third of South Africa (Walker & Hoffman, 2024:2) while Namaqualand alone spans an area of approximately 50 000km² (Davis, Hoffman & Roberts, 2015:2), thus requiring officials to cover remarkable distances to pursue suspected poachers. This often involves working with landowners since poaching takes place predominantly on privately owned land rather than public land (Bruwer, 2023:10).

Communal areas were vulnerable to illegal harvesting because they were accessible and sometimes received more foot traffic. In Concordia, one resident said that people in the town were aware of poaching taking place in the communal lands but that monitoring and enforcement could be difficult where authorities were less visible and sometimes only a handful of plants were being stolen on an infrequent basis by locals. The communal areas of Namaqualand, which are home to 45% of its population, occupy over 25% of the region (Davis, Hoffman & Roberts, 2015:2), meaning that farmers were less likely to notice or report the presence of individuals searching for plants or digging.

They were also not necessarily equipped with the same resources that wealthier private farmers had to protect their land.

Additionally, poachers were willing to hike for kilometres and lie in wait for opportunities to steal plants in areas where they knew police activity would be low. Olivia explained that “often what the assumption is is they camp for days on end in really remote areas – specific areas (where we know have got specific plants) they hit again and again, but there are breaks in between because they know that once [authorities] get the knowledge of it then police activity increases. Then it probably dies down a few days later. So it's actually quite complex” (Researcher 1, 2024). This cat-and-mouse game between harvesters and authorities, where each side’s actions informed the other’s, made it difficult to form a concrete strategy. Rather than being impulsive and opportunistic, harvesting activities were built on intimate familiarity with both the landscape and the patterns of surveillance. Moving from one route to another gave syndicates access to new sources of plants and labour, allowing them to evolve further. Olivia further suggested that authorities were having to adapt and constantly update their knowledge to keep up with the scale of harvesting and new strategies, making it a “very difficult thing to quantify” (Researcher 1, 2024). Conservation and policing models had to keep up with mobile, calculated forms of environmental crime whilst giving staff enough time to attend to their everyday responsibilities and other biodiversity concerns.

Geographical isolation makes enforcement difficult and allows criminal networks to evade detection. Studies suggest that geographical isolation has an influence on crime. One study in Madagascar (notably a vastly different context but with several similarities in levels of crime and poverty, along with great distances between rural areas and cities) found that sparsely populated areas that are far from urban centres harbour more criminal activity, possibly owing to the fact that isolation provides safe harbour for criminals (Fafchamps & Moser, 2003:666). There are contrasting findings regarding whether infrastructural improvements, such as the construction of roads, and urbanisation may reduce or contribute to crime (Glaeser and Sacerdote, 1999; Fafchamps & Moser, 2003). Because the victims in the Karoo are non-human plants, crime does not require a higher human concentration in these areas to thrive. Throughout the Karoo, geographical isolation works in the favour of illegal harvesters by providing them with safe passage; there are fewer people to potentially witness and report suspicious activities. To counteract this, conservationists worked with town residents, local

businesses, and farmers to create a reporting system. Locals essentially acted as informants for the nature reserves and parks by alerting them to the presence of suspicious individuals or suspected illegal harvesting. Farmers played a central role in this because they often shared boundary fences with the reserves. Maxie claimed that this system had worked well for increasing their response time and potentially scaring harvesters away before they could do excessive damage. In one instance, she believed that a group had been scared off the reserve, leaving bags of freshly harvested plants along the fence line.

Springbok is a more densely populated area and a hotspot for tourists either passing through or staying for the annual flower season, meaning that illegal harvesters could maintain a greater degree of anonymity in comparison to Nieuwoudtville and surrounding towns where locals seemed to be acutely aware of the presence of *inkommers*, who they claimed were easy to recognise amongst the small population. Whether tourists attended veld tours in groups or visited reserves to do '4x4' trails, they could not be monitored consistently and were sometimes able to get away with a handful of plants. Having locals remain vigilant took some of the pressure away from conservation NGOs (Bruwer, 2023:18). Arno, a farmer in Kenhardt, claimed that the farmers in the area had adopted this strategy following several cases of people trespassing on their land to steal both livestock and plants (Respondent 10, 2025). Because police could not respond in time to farms that were a thirty-to-forty-minute drive from the town centre, they had resorted to rallying neighbours and friends from surrounding farms to make a citizen's arrest; holding the suspected 'poachers' and thieves until law enforcement arrived. An article for National Geographic relayed a case of a farmer who held three suspected illegal harvesters at gunpoint and transported them from his property to the Kamieskroon police station (Maron, 2022). Despite unreliable cellphone signal making it difficult for farmers like Arno to call for assistance, their unity in the fight against poaching afforded them some sense of reassurance.

Customs officials are burdened with the responsibility to catch offenders but are often not equipped with the tools or training to do so. At borders posts where officials are on the look-out for illegal consignments, they have to rely largely on travellers declaring listed items for themselves rather than actively inspecting luggage. At Cape Town International Airport, for example, passengers are requested to declare plants, plant roots, and cuttings but border authorities do not individually search the bags of the

thousands of people that pass through every day. In a DFFE paper for the 2008 International Conference on Environmental Compliance and Enforcement, members of the Strategic Compliance and Enforcement unit highlighted the difficulty of monitoring imports and exports with limited resources (Du Toit & Craigie, 2008:446). In 2008, O.R Tambo International Airport in Johannesburg was already receiving over one hundred and fifty million cargo items and seven million passengers annually. These numbers made it impossible for the six officials at the time to monitor all of the people and items moving through every day (Du Toit & Craigie, 2008:448). In 2024, authorities were still facing an immense task in preventing plants from leaving the country without papers, despite heightened CITES enforcement at the borders and frequent roadblocks. Training customs agents, airport and seaport staff, and shipping companies to identify and handle plants was seen as an essential measure. Identifying plants taken from the wild is complicated, but knowledge of key traits “such as knowing that a *Conophytum* the size of a tennis ball could be 100 years old”, could make a difference (Bruwer, 2023:24).

Upon returning from a trip abroad, I observed one sign notifying airport visitors of restricted items. It was a small banner titled “WARNING!! DECLARE” in red writing with a list and stylised images of goods that need to be declared at customs. The banner, created by the Department of Agriculture, was written in English and displayed in a corner after Passport Control. The majority of the people around me in the airport had also disembarked from an eleven-hour flight and were visibly flustered and bothered by the snaking, disorganised queues and delays. Having waited over an hour after landing to get through security checks and collect one’s baggage, passengers are unlikely to want to spend more time queueing declare imported plants even if they are aware of regulations. One can assume that many would rather to pass through customs, where only three of around eight stations were open and already occupied by passengers engaged in disputes over other items such as alcohol. For people leaving South Africa, there were no signboards or announcements warning departing passengers that it is illegal to move protected plants out of the country. This pointed to a dire need for more awareness campaigns and more law enforcement officials to ensure that passengers cannot enter or leave the country with wild plants. Increasing awareness and enforcement capacity required significant resources, which conservationists knew were sorely lacking.

Despite these challenges, Emily and members of SANBI reported a marked decrease in the number of plants being seized annually. They attributed this partly to the

collaborative efforts of law enforcement and organisations across the Karoo but they also acknowledged the possibility that poachers were simply getting away more often. The pioneering of succulent detection dogs, the development of new technologies, and the numerous partnerships formed to save plants were only a few of the successes that conservation teams celebrated since the height of the crisis during the pandemic. Implementing successful monitoring and enforcement strategies in the Karoo was only one step towards protecting indigenous flora. Far more extensive preventative measures would be necessary for the trade to decrease to such an extent as to ensure the ongoing survival of targeted species.

Reserve staff frequently described a growing sense of threat on the ground; a perception that in turn shaped calls for more securitised responses. One reserve manager, Petrus, claimed that ‘poachers’ were often armed with guns that they had acquired illegally. He believed that it was becoming necessary for reserve security guards to consider arming themselves as harvesters were going to greater extremes to acquire plants. Reserve monitors and rangers did not feel equipped to handle the armed *inkommers* or foreigners who they had observed breaching the reserve’s fencing and hiking up the mountain in the middle of the night to steal plants. They conjured images of violent, armed poachers, on par with those pictured on the news during the height of the rhino poaching pandemic. This masked the reality: that poor, unequipped individuals (sometimes, but not always, foreign nationals from neighbouring countries) were dropped off by organised crime groups, expected to steal thousands of tiny plants for a fraction of their market value. In worst cases, it was believed that they were paid with drugs such as *tik*, a form of crystal methamphetamine, and made dependent on the plant trade to survive (Bruwer, 2019:14). The gap between perception and structure helps explain why securitised enforcement proposals are politically attractive but practically and ethically fraught. Heightening security in reserves would not only require extensive resources that can be used more effectively to help communities get out of the plant trade, but also risk further alienating those who are already bearing the brunt of poaching legislation and destroying vital relationships between conservation and communities.

Another problem with monitoring the trade is that endemic species are not protected once they leave the country. The species listed on CITES III may be traded on the condition that the certificates issued for them are approved by the state’s Management Authority; trade in these specimens does not require the Scientific

Authority's approval. Countries request the co-operation of other parties to monitor Appendix III species but this is not required by law, meaning that these listings are essentially one-sided (Prinsloo *et al.*, 2024:40). In my interview with Claire, she highlighted how easy it is for plants to be smuggled across borders even with CITES regulations in place (Researcher 2, 2024):

We had a few species listed on CITES [Appendix] III, which places no legal obligation on any other country to help you fight the illegal trade; they're just meant to notify you when they see your plants in the country. So apart from the few species (which I can't recall immediately) that are already listed on like CITES 2 for example, where you need a permit to import and export them, our plants are able to leave the country legally.

Once species cross the border – predominantly into Namibia, Botswana, Zimbabwe, and Mozambique – they are no longer protected by South African legislation and surrounding countries are not required to prevent them from entering the legal market.

Claire suggested that the effectiveness of our laws in prosecuting suspected poachers would be dependent on where they were apprehended. The 'good thing' with the species targeted by poachers is that they are endemic, meaning that organisations can trace them back to their province of origin. However, Claire explained that plants are then protected only by the legislation of that specific province, meaning that in cases where authorities are aware of an endemic species being illegally harvested and moved or sold across provincial borders, they may be powerless to intercept or prosecute perpetrators (Researcher 2, 2024):

We've had a lot of incidents where plants that were harvested in the Northern Cape are intercepted at O.R. Tambo. So you can intercept the plants because you know that law enforcement there has been made aware of the fact that it is a crime to harvest them from the Northern Cape, but you can't arrest anyone because it's not a crime in that province. So this sort of concurrent national and provincial legislation that we have for environmental laws in South Africa is a massive problem for endemic species.

She thus drew attention to a critical governance problem: South African environmental protection is split between national and provincial authorities, creating dangerous loopholes for endemic species. Provincial laws are designed to cover more specific issues that may not be accounted for in NEMBA. In practice, each of South Africa's nine provinces has its own conservation ordinances or regulations governing the trade in indigenous species. South Africa's Constitution allows for the national, provincial, and local spheres of government to make and administer biodiversity laws concurrently (SANBI, 2025). Although this allows provinces and municipalities to develop laws that suit their specific needs without being forced to rely solely on national legislation, it also adds a layer of complexity to implementation.

Scholarly reviews of South African environmental law confirm this tension. Although the Constitution recognises nature conservation as a shared function, in practice provinces retain independent conservation powers. Some regions have yet to update their legislation and species lists, leading to an incoherence that undermines enforcement efforts. Suspected criminals are typically only charged according to provincial legislation for cases involving species not yet listed on TOPS (Prinsloo, *et al.*, 2024:40). Claire, like many others in her position, found this state of affairs confusing and unacceptable: "It blows my mind that we haven't arrived at a place yet where our national legislation protects species that are endemic to a specific province. It makes no sense to me" (Researcher 2, 2024). This call for a national law to protect endemic species reflects a consensus: without harmonised legislation, endemic flora will continue to fall through the cracks.

Delays with adding new species to TOPS contributes to these issues. For new TOPS listings, Claire explained, multiples species of flora and fauna are sent to legislators at once. However, "because there might be an issue with one species of animal, for example, being listed, that entire list would be halted so that consultation can continue," she continued, "I know the powers that be always say it's super hard to get plants listed – to add them to TOPS" (Researcher 2, 2024). Thus, by the time the listing process is complete, one plant species may have been harvested close to extinction in the wild. Another issue is that government departments such as the Department of Forestry, Fisheries and the Environment will wait for evidence of a species being traded illegally before they consider listing that species on the TOPS. Claire asserted that, "There has to be, ideally, almost an anticipatory process of listing things" (Researcher 2, 2024). This would mean

listing plants based on their potential to become a poaching target, essentially barring their sale before they enter the market or consumers become aware of them: “If you are an endemic succulent in South Africa today that looks remotely like anything that's already available abroad, then I think you should be listed” (Researcher 2, 2024). One of the problems with new CITES and TOPS listings is that, firstly, this may shift demand and cause poachers to circumvent new restrictions by targeting another related group of plants and, secondly, introduce more criminal actors into the trade (Hübschle & Margulies, 2023:5). When species are more heavily restricted, their value in the marketplace increases, leading syndicates to employ more drastic measures to acquire them.

Residents and conservationists in both Nieuwoudtville and Springbok expressed their growing frustration with the resistance that the state has towards recognising the importance of indigenous plants to biodiversity and livelihoods. They were in support of new regulations so long as these could be implemented quickly and effectively without impeding their freedom to benefit from the region's natural resources. Claire touched on a sentiment that often emerges in discussions of biodiversity conservation policymaking and implementation in South Africa: that beneath the state's claims about the difficulty of adopting new laws lies more alarming currents of negligence, resistance and bureaucratic inertia. There is reluctance to list plants too quickly for fear of harming the legal market. While this ensures that legal sellers and nurseries are somewhat protected, it also allows the illegal trade to continue expanding. This tension between supporting long-standing legal businesses and cracking down on the illegal trade means that even well-intentioned regulations are often diluted or delayed. In February of 2023, seventeen succulent species and one succulent genus (*Conophytum*) were added to CITES Appendix III, meaning that the trade in any specimens or derivatives requires official export permits obtained in compliance with domestic legislation (Variawa, Pfab, & Jabar, 2023:1). The listing of these species was celebrated as a major success and a step in the right direction. However, the permits required for their trade posed a new set of problems for the legal market, where large numbers were still being sold even as consumer demand shifted onto other unregulated plants.

2. The Permit System

Operationally, CITES works through a permit and certificate regime. Export, import and re-export permits must be issued by national Management Authority only after any conditions set out in the Convention have been satisfied. CITES documents must normally accompany consignments and indicate the specimen's source using standard source codes (for example, 'W' for 'wild') which are essential for traceability and for differentiating legal commerce from illicit supply chains. The Secretariat and Parties have recognised persistent implementation challenges, such as fraudulent or forged documents and weak inter-agency information exchange, for which they have developed both procedural remedies and technical solutions. One of these is the digitalisation of permitting (the eCITES electronic permitting initiative) to improve permit integrity, interoperability with customs systems, and rapid verification across borders. While e-permitting promises to reduce opportunities for fraud, make the system less susceptible to corruption, and speed up the verification process, it also raises questions about cost, interoperability, and capacity in states with fewer resources.

The UNODC advises that CITES states require stronger proof of legal sourcing for people wanting to import wildlife goods to prevent illegal products from entering other jurisdictions (UNODC). South Africa's permit system is modelled on the CITES recommendations. Under NEMBA, a range of permits can be issued by the management authority for the collection, possession, cultivation, transport, and sale of CITES-listed species. These permits can be cancelled at any point by the issuing authority if the conditions are contravened or the permit holder has failed to comply with any conditions of NEMBA or any other law, including international laws (NEMBA, 2004). The purpose of introducing permits for selling indigenous species was to prevent people from participating in or benefiting from criminal activities, but this system not only had its own pitfalls that syndicates could take advantage of, but it also put nurseries and individual buyers in a difficult position.

The CITES Secretariat acknowledges that permits can transform contraband into legitimate merchandise overnight (CITES Secretariat, 2025). Fraudulent CITES permits are known to have been used by poaching syndicates. Management authorities do have security measures in place to allow officials to detect fraudulent permits, but this relies on officials being prepared to recognise them (Du Toit & Craigie, 2008:450). There are

various methods that smugglers use to go through checkpoints undetected. Firstly, permits can be faked by altering an original copy and attaching it to a shipment that contains similar goods or a far greater number of items. Phytosanitary certificates, which provided another layer of protection for countries receiving plants could also be falsified. Claire explained that at border crossings “you still need phytosanitary certificates, but those aren't the same as a permit and you can fake them. And they have been faked” (Researcher 2, 2024). Secondly, syndicates might apply for original permits and reuse them for multiple shipments. Lastly, original permits for CITES II species could be used to ship specimens listed on CITES I (Du Toit & Craigie, 2008:450). Training officials and employees in all law enforcement agencies to identify both listed species and authentic permits has been a vital step in preventing wildlife smuggling.

Although the permit system in South Africa worked relatively well for authorities monitoring and intercepting wildlife shipments in the Northern Cape, it also elicited mixed responses from participants who were required to carry these certificates. For succulent nurseries like Mirna and Jacob's, permits made it nearly impossible to continue providing rare plants for the legal market since they no longer had access to seeds (Respondent 9, 2025):

With my previous permit, I could collect seeds from nature if I had a letter from the owner of the farm or something like that. Now, the permits don't have that part anymore; I'm not allowed to collect seeds from nature anymore. So getting local plants is near impossible, because most places where you buy seeds only have your well-known lines and stuff that's easy to grow. Of course, you know, local plants is not that easy to grow from seeds.

Collecting seeds from nature had been a viable way of propagating rare species for the market without irreparably damaging ecosystems. Nurseries could source their own seeds using more sustainable methods, enabling them to produce the same plants that were in demand without having to rely on organisations such as SANParks or SANBI. Indigenous plants are considered natural genetic resources, meaning that special legal permits are required to collect them. According to SANBI, this system is “highly complex and fragmented” (SANBI, 2025). Mirna and Jacob chose to stop collecting seeds rather than risking losing time and money in the process of appealing to the issuing authority.

Mirna further explained that their business had been slowly declining since they stopped being able to grow and sell the most in-demand plants, despite it being a fairly simple process to acquire documentation for local sales (Respondent 9, 2025):

Getting the permits now is not that difficult. It changed a lot where [before] you could get one permit that's all inclusive, now you have to individually buy each permit that you want or that you require. You started, I think, with a thousand [Rand]. Now it's R1000 per each certificate that you want. That's like really a lot. So if I want to get a permit now for what I used to have, it's gonna cost me close to R4000.

Mirna's account underscores how the financial aspect of the permitting process has become increasingly burdensome despite being fairly straightforward overall. The shift from a single, inclusive permit to multiple costly certificates emerged as a prohibitive barrier for nurseries. With nurseries no longer producing or supplying as many plants as they did during the Covid-19 pandemic, owners like Mirna and Jacob found themselves unable to cover these cumulative costs. Compared to large nurseries, especially those in the Western Cape that sell a greater variety of plants, these specialist succulent nurseries are disproportionately affected by the cost of compliance to legal frameworks. Owners also felt disincentivised knowing that, while they jump through hoops to keep their businesses afloat, poachers continue profiting by filling a gap in the market. Ultimately, despite ensuring formal oversight, requiring nurseries to register and purchase pricey documentation for each plant or species cut off a significant portion of their income whilst doing little to support the legal trade.

It would be a mistake for conservation policy to assume that permits function as a neutral tool to separate legal from illegal actors. Nurseries were not only bearing the brunt of compliance demands but also experiencing heightened surveillance. Claire picked up in her research that business owners were frustrated with constant monitoring from law enforcement and conservation organisations: "A lot of the nursery owners felt like all of a sudden they were being policed instead of the people who are actually putting in the orders" (Researcher 2, 2024). Several nursery owners expressed resentment at this imbalance, feeling unfairly criminalised while poachers profited. Claire believed that the mistrust of reputable nurseries and their subjection to these strict regulations was unfair.

She understood that conservation organisations were not willing to engage or compromise with nurseries due to past cases in which they were found to be in contravention of NEMBA, “It doesn't help that that stupid nursery in the Eastern Cape was actually guilty of harvesting illegal plants” (Researcher 2, 2024). However, she believed that the punitive posture of organisations like SANBI – who refused to enter dialogue with nurseries that had even slight infractions – ignored the broader context: under-resourced compliance officers, complex regulations, and a regulatory culture that often seemed more inclined to punish than to support. “Obviously some nurseries are not going to completely comply with everything that they have to because there are not enough compliance officers. It could be a simple oversight or something ridiculous like that,” she said, implying that these minor setbacks should not dictate all future engagements with business owners (Researcher 2, 2024). Nurseries had become an ‘easy scapegoat’ while online marketplaces and international networks remained largely beyond the reach of local enforcement.

Ryan, who led the Vetplantfees veld walk, voiced a problem he had with the permit system, namely that the ease of acquiring a permit risked legitimising illegal sales: “Obviously they think it’s all legit because people [sellers] are part of the festival because you get a permit. But that permit actually means nothing, you can get that thing like this [he snaps his fingers to indicate the speed] because Cape Nature doesn’t have the expertise I think to deal with these things” (Respondent 1, 2024). He suggested that Cape Nature, as the government entity responsible for nature conservation in the Western Cape and the issuer of permits, was ill-equipped to handle or issue them because they could not be verified. This was a dire concern because it compromised the trust that buyers had in sellers.

Issues with permits were evidently not confined to sellers. There is a system in place at nurseries across the Northern Cape in which receipts are issued as ‘permits’ to buyers. According to Cape Nature, one does not necessarily need a permit to have or transport any endangered flora that has been sold or donated by a registered grower/seller, so long as one can produce a receipt or similar written document (Cape Nature, 2025). When someone purchases a plant, they are issued a small paper receipt that includes the name of the nursery and the species {insert photo}, showing that they received it from an accredited seller. Mirna and Jacob’s nursery, for example, provided detailed invoices to customers. The invoice or receipt essentially functions as a proxy; in

the event that people are pulled over at a roadblock or at customs, most buyers would typically not be able to prove the origin of plants in their possession otherwise.

Yet, these informal systems are fragile. When I purchased plants in Springbok during a scoping trip for this research, I felt reassured knowing that I had bought from a reliable seller and would be able to show my 'permit' when crossing back into the Western Cape. I was pulled over at a police checkpoint during the drive back and it was there that I realised I had misplaced the receipt from the nursery and, had the officer requested to see a permit, I would not have been able to produce any documentation showing that they weren't harvested from the wild or stolen. Even when receipts are kept, they degrade or are lost over time. There is also a low likelihood of most buyers being able to produce these invoice permits at any point in the duration of their plant's life. Thus, if they are caught transporting a specimen on the TOPS list, they may be arrested and fined or (more recently) potentially imprisoned. This raises the risk of being inadvertently criminalized.

At SANBI's talk on poaching during the 2024 Vetplantfees, several audience members had questions about donating plants to friends or family and how they would verify the origins of plants that have been inherited or donated to them, especially since people seldom keep receipts for even a few days or weeks, let alone decades. One audience member later conveyed this concern in a discussion: "if I inherit a large collection from a friend or family member that they got long before these plants became endangered, I can't tell where the plants were from, so do I get a fine because I don't have a permit?". This was echoed by two avid enthusiasts, Mark and Catherine, who voiced their unease over the potential to accidentally be found in possession of protected plants: "What happens when you receive a plant as a gift or it gets passed down to you with your loved one's belongings?" Catherine asked, "You might not know where it came from, or that person giving it to you could have bought it somewhere thinking that the shop was legitimate". Another buyer at the Vetplantfees feared that if she orders plants online, where she is unable to verify their origin, she might be fined or arrested later when she wants to transport or rehome them. Regardless of whether one can reliably check the characteristic traits of a wild plant, these buyers believed that it should not be taken for granted that everyone has the knowledge or ability to do it.

Several participants from NGOs claimed that was unlikely that a person would be stopped by law enforcement for possession of a handful of plants – arrests in the

Northern Cape have largely been based on the quantity of plants found, the species, and whether they can be confirmed by specialists as belonging to the wild. However, penalties have yet to be standardised on a national level, leading to cases of poachers being sentenced to seven years in prison for harvesting seven elephant trunk plants while others receive fines (Bruwer, 2023:23). The potential to be fined or jailed for not having permits invoked enough fear in law-abiding plant lovers for them to be hesitant to purchase, move, or sell them, meaning that the risk of being criminalised was enough for them to change their behaviour.

To address concerns such as these, CITES makes provision personal or household effects, donations, species taken from the wild before they were listed as vulnerable or endangered, and artificially propagated specimens or their derivatives (Lavorgna *et al.*, 2017:279). These exemptions allow for plants to be legally exported or moved across borders without permits or certificates. One unintended consequence of this is that fraudulent claims can be made by people attempting to move illegally harvested plants without documentation (Lavorgna *et al.*, 2017:279), allowing them to disguise specimens in small shipments, for example as household effects or gifts. As discussed previously, these strategies make it easy for smugglers to use CITES exemptions designed for reputable collectors or buyers in their favour. Thus, recognising specific circumstances and alleviating plant owners' anxieties might come at the expense of giving smugglers a way out.

Ultimately, while permits served as the cornerstone of conservation legality, they risked alienating nursery owners and collectors who were key allies in the fight against the illegal plant trade, creating friction with those best positioned to promote cultivation, education, and sustainable trade. Permits demonstrably helped authorities monitor the trade across provincial and national borders and maintained a legal channel for sales, but their complexity, delays, and uneven implementation at times hampered the legal market and opened loopholes that syndicates could exploit. Legitimate sellers could continue trading plants legally without fear of penalties. However, the same permits also created difficulties that hindered the legal trade and gave syndicates a means to traffic plants undetected. Strengthening the permit system requires streamlining and digitising procedures to ensure that it is more difficult for documentation to be forged, possibly using biometric security or machine-readable features. Although putting more resources into these improvements would increase the price of permits, assisting sellers with

managing the costs and processes of obtaining them would enable them to continue supplying the legal market.

3. Intersections of Technology, Social Media, and Online Crime

Across the internet and online platforms, threatened and protected plants are advertised, auctioned, and sold by trafficking syndicates to consumers across the globe. Cyberspace has long been considered a lawless land where criminals hide behind nameless, faceless profiles and consumers have access to illegal products at the click of a button. The immense scale of the internet, the anonymity it affords users, and its accessibility have made it an ideal space for wildlife traffickers to operate. Illegal traders openly advertise thousands of wildlife products on easily searchable websites and social media platforms such as Instagram and Facebook where privacy regulations and resource constraints make it difficult to track down individual sellers. Simultaneously however, online technology can also be used by authorities to monitor and intercept the illegal wildlife trade (Lavorgna, Middleton, Whitehead, Cowell & Payne, 2020:7). Since traditional law enforcement is not effective for cyberspace (Lavorgna *et al.*, 2017:285), conservationists have found creative ways to continue policing the online market. Despite limited research on the online wildlife trade, various collaborative projects have been launched by national and international law enforcement authorities, conservation NGOs, scientists, and criminologists to address this growing online market.

Social media provides the most direct line of communication between poaching syndicates and harvesters, enabling them to quickly and efficiently recruit people in South Africa who are willing to poach plants. Prior to the Covid-19 pandemic, most harvesting was done by foreign people from Europe and Asia who entered the country personally to collect plants. The pandemic forced people to find new ways to procure plants, and sellers were eager to continue trading by moving their businesses online to applications like Whatsapp. Recruitment of harvesters could be done via existing networks, thus eliminating the need for collectors and trafficking syndicates to collect plants in person. This meant that they could conduct business from outside of the country where local law enforcement do not have jurisdiction. According to Claire, it appeared that most people harvesting wild plants in the Karoo were contacted via social media. This was a “comfortable way for the sort of intermediary person to avoid that direct

contact with someone” (Researcher 2, 2024). At the same time, nurseries and reputable sellers also used social media for the legal trade. Mirna and Jacob explained that most of their business is done on WhatsApp since they had buyers around the country who ordered plants to be delivered to them (Respondent 9, 2025). Sellers at the Vetplantfees promoted their online profiles where buyers could stay updated on the newest stock and place orders. Evidently, social media and online platforms facilitated both the legal and illegal plant trade, making it a key site for conservation authorities to enforce environmental legislation.

One key online conservation project is FloraGuard, a collaboration between University of Southampton, the Royal Botanic Gardens Kew, the United Kingdom Border Force, INTERPOL, TRAFFIC, and Plantlife. The project sought to combat the internet-facilitated illegal wildlife trade by combining digital resources and online tools such as adaptive artificial intelligence (AI) with human knowledge and expertise (Lavorgna *et al.*, 2020:7). In the FloraGuard project, methods such as web scraping were used to search the internet for instances where specific protected plants were mentioned in relation to trading. By analysing the extracted data, criminologists and authorities could track down instances of the illegal online trade in plants. Web scraping, or harvesting, involves searching for specific information and extracting data from a given online page or website and saving it for retrieval in the future (Lavorgna *et al.*, 2020:69). This is done using a web browser – Bing in the case of FloraGuard – or Hypertext Transfer Protocol (HTTP) either manually by a person or by a web crawler (Zhao, 2017). According to Olivia, one goal of FloraGuard is to enable law enforcement to “scrape the web themselves” or use web crawlers to find online sellers and to trace or predict which species are in demand (Researcher 1, 2024). This will eliminate the need for authorities to rely solely on NGOs who have the tools and expertise to use the technology.

Additionally, Olivia explained that she works with another AI project looking at an algorithm capable of scanning images of passenger baggage or cargo in airports and looking for wildlife products. She explained that the AI is trained on images of a specific wildlife product and “learns to pick that up in a live environment” (Researcher 1, 2024). However, training adaptive AI and machine learning algorithms to correctly identify and differentiate between plants on the basis of images is challenging. Olivia explained that this was because there already existed a legal trade in plants: “So fresh cut flowers are sold to South Africa, for example Proteas leave the country and go to the Netherlands.

How would you tell the AI web scraper, “Let these guys go,” but then tell him that something that looks super similar or has the same consistencies should be flagged” (Researcher 1, 2024). Currently, picking out protected or CITES listed species online still requires individual experts who can sift through thousands of images in order to accurately report suspected illegal activity.

In these internet-facilitated projects, experts were faced not only with the vast scale of the internet – where traders and buyers can hide behind anonymous profiles and privacy regulations – but also a lack of time and resources required to carry out routine surveillance (Lavorgna *et al.*, 2020:7). FloraGuard demonstrated that, with web crawlers to identify and extract relevant information, manually identifying subsets of relevant posts from a group of 13 697 posts on three different species took their criminologist approximately 25 hours per plant group. Olivia suggested that “all of this has to be automated – there’s no way humans can deal with the number of adverts that are available online” (Researcher 1, 2024). Allowing machines to take on the task of identifying poached plants online would give conservationists more time to manage work on the ground. However, implementing this technology would require resources that are already limited for conservation organisations in South Africa. The limited number of experts who can identify and trace the origins of endemic species in the Northern Cape are inundated with other tasks, leaving them with little capacity for training AI or assisting developers.

Another issue authorities face is that many of the images and advertisements online may not be the actual plants on the market since, Olivia said, “[sellers] also often don’t post the images of the plants that they sell” (Researcher 1, 2024). This leaves room for people to either sell wild plants without using real photos or to use photos of wild plants that they have taken elsewhere despite selling artificially propagated specimens, thus making it almost impossible to pursue legal action against them. On Instagram, for example, sellers oscillated between high definition edited images to represent a group of plants in their collection and candid photographs of individual plants. It was suspected that even accounts that exclusively posted artificially propagated plants may still have had unadvertised wild plants in their collections for consumers who specially requested unique specimens and were willing to pay for them.

Conservationists were seeking collaboration from platforms and applications such as Etsy and Facebook, where large numbers of plants were being sold without

repercussions. Olivia described the current state of the online market as a 'free-for-all' (Researcher 1, 2024):

E-commerce platforms and social media are directly facilitating illegal trade. They prioritise threats to human health and then they go down the list of priorities. And plants are not even on that list... And the problem is that the platforms are not held accountable. We need top-down legislation that basically says 'if you want to sell your products in my country, then this is the risk' – if someone wants to sell a bomb on your platform, you are held liable for allowing that to happen.

She believed that a top-down approach was necessary to push platforms to be compliant rather than acting as catalysts for the plant trade. Social media moderators and software developers do not view the prevention of illegal trading with the same urgency as protecting users from sensitive content, meaning that their terms and conditions do not include clauses to prevent the sale of endangered wildlife. Currently, global and national legislation does not require platforms to actively prevent wildlife crime. One researcher working on the Safeguarding Succulents project found that one of the biggest difficulties was that online markets are outside of government regulation. Authorities must go through lengthy processes to access user information and request policy changes. Thus, many applications are behind on updating their policies to prevent this type of activity. Where platforms do have policies on plants and seeds, Olivia (Researcher 1) believed that they were misinformed because "they say they don't sell endangered species according to CITES but CITES doesn't declare things as endangered or not... so their policies are totally misinformed" (Researcher 1, 2024). She suggested that this is where it is vital to have conservation-minded algorithm developers who can collaborate with ecologists.

Olivia went on to say that, with the help of online platforms, the quickest way for authorities to manage the online trade would be to send blanket notifications or forms to sellers every time they upload plants, notifying them the moment they key in a species or a word that's similar to a species that's protected. Their advert would then be reviewed before it's posted. Alternatively, after the advert is posted and seen to contain protected plants, the platform can then follow a protocol to warn the seller: "Then what we want is for you [the platform] to inform the seller and say to them 'Are you aware that this is not allowed to be sold? You basically haven't mentioned CITES in your advert, this advert's

going to be removed if you don't change your posting” (Researcher 1, 2024). Platforms would be able to raise awareness and discourage the illegal plant trade by including clauses in their terms that allow them to remove posts that are flagged for containing species on the CITES list.

Overall, platforms appeared open to making changes. Olivia’s team worked with developers who were willing to talk about plants and take steps towards reviewing their policies. Part of this involved altering their listing forms to distinguish between plants and other products being sold by requiring sellers to include information about their provenance or whether they were CITES-listed. It was believed that this would avoid punishing legal sales whilst encouraging vendors to be more transparent (Researcher 1):

If someone sells a protected plant on Etsy, you can't just automatically block that advert, they could have acquired [that plant] legally if they're nurseries who are registered with CITES and they can sell CITES I species or CITES II. It's so complicated. And we don't want to take the chance that we're blocking legal trade. Minor changes like this would give sellers the tools to prove to authorities and customers that their businesses are legitimate, while making it easier for their stock to be monitored remotely. Ultimately, these solutions demonstrated that effectively combatting the online illegal plant trade would require solutions that not only prevent criminal activity but also encourage and reward compliance.

Smith, Figueiredo, Victor, and Klopper (2023) argue that readily available taxonomic information enables poachers to easily locate plant species and individual specimens. Before the current digital age, data on plants were only available to bona fide researchers who had access to scientific publications in specialist libraries. Online resources have since made taxonomy more widely accessible to anyone seeking accurate information on occurrences of particular species (Smith *et al.*, 2023:717). Although the electronic dissemination of plant descriptions and data has great utilitarian and scientific value, online taxonomic data provides poachers with precise locations of plants in their natural habitats (Smith *et al.*, 2023:718). This is because the labels, included in herbarium collections, which are accompanied by images, provide highly detailed data on the exact occurrences of specimens (recorded on georeferencing equipment) to within a few metres.

The combination of readily available taxonomic information with digital technology was proving to be detrimental to wild succulents in the Karoo. Online

platforms allowed plant lovers to share photographs and information whilst also attracting greater interest in plants. Members of the Vetplantfees veld walk group frequently photographed interesting plants and remarked about their morphological features. They compared the taxa they encountered to those that they had seen in other regions and encouraged one another to document occurrences by taking photographs, which they would later upload to an online citizen-science application called 'iNaturalist'. Their interactions – with the plants and with each other – demonstrated substantial botanical knowledge and experience in identifying succulents. Claire indicated that iNaturalist made it easy for people to find plants because locations are included, but that platform had started removing locations (Researcher 2, 2024). Nonetheless, locals used it to log where they had encountered plants, even as they were aware of illegal harvesting. There was evidently a gap between their knowledge of the plant trade and their behaviour online.

The internet emerged as a multi-faceted digital space for the succulent trade: its scale, accessibility and affordances of anonymity enabled trafficking syndicates to globalise demand and to recruit local harvesters remotely, yet the same digital tools also offered novel avenues for detection, monitoring and intervention. Projects such as FloraGuard illustrated the promise of combining web scraping, adaptive AI and expert knowledge. Technological fixes had practical limits. Platform policies and governance remained patchy, creating a regulatory gap that traffickers could exploit, while readily available taxonomic and citizen-science data risked unintentionally revealing the precise locations of vulnerable plants. Stricter regulations on the online ornamental plant market could play a role in addressing the consumer demand. Technology could also allow law enforcement to intercept syndicates attempting to recruit harvesters. This would decrease the vulnerability of Karoo residents to being recruited into the illegal trade, potentially sparing them from harsh punitive measures.

4. Criminalisation

In recent years, South Africa has shifted towards stricter laws governing the trade in indigenous plant species in response to increased seizures and unprecedented levels of biodiversity loss at the hands of criminal groups. Media outlets, prosecuting authorities, and interviewees reported numerous cases of individuals receiving sentences of up to

fifteen years for poaching, which many consider to be wildly out of proportion when compared to other serious crimes. Nonetheless, these harsher punishments have simultaneously been praised by other actors in government and conservation organisations who believe that this is the only way to deter poachers. While these regulatory changes aim to protect biodiversity, South African scholars caution against punitive approaches that risk criminalising those who depend on the plant trade for their livelihoods. Draconian legal instruments – such as those modelled on United States wildlife crime statutes – cast a wide net, ensnaring many actors who may be operating under coercive socio-economic conditions. Moreover, regulatory frameworks often mirror classed, racialised, and gendered hierarchies, marginalising people who rely on informal or customary uses of nature. Experts are sceptical about the efficacy of elevating poaching to the status of serious crimes, ultimately leading many to advocate for more historically informed, socially just policies.

Environmental law enforcement efforts vary greatly between CITES parties, providing a range of examples of how authorities manage wildlife crime as well as varying degrees of success. The United States of America was one of the original nine signatory nations when CITES came into force in 1975 and remains a yardstick for environmental law enforcement in conversations surrounding wildlife crime today. The United States developed one of the world's most comprehensive and progressive enforcement systems, which followed a multidisciplinary, multi-agency approach that set the country apart as a global wildlife conservation leader. Other than CITES, the U.S. implemented the Lacey Act in 1900 and the Endangered Species Act (ESA) in 1973 – preventing the sale, shipping, or offer for sale nationally or internationally of species listed as endangered or threatened (Kazmar, 2000:116). The Lacey Act has the broadest scope, encompassing the widest range of species and activities as well as providing longer incarceration terms for violators. It strengthens the enforcement of CITES and other federal wildlife laws. The Endangered Species Act functions similarly by providing misdemeanour penalties for the illegal trade and enlisting the cooperation of federal enforcement entities (Kazmar, 2000:116). This robust legal backing has helped deter some illicit activities and set a global example. Very few CITES signatory nations have implemented wildlife crime legislation as effectively as the United States.

The U.S. appears to take a more iron-fisted approach to environmental and wildlife crime. One instance where this is visible is in the strict liability clauses present in some

laws, which do not take into consideration a person's mental state or intent during trial (Kazmar, 2000:121). Under the Lacey Act, for example, culpability is attached to anyone who trades in, receives or acquires wildlife and who "knows, or in exercise of due care should know, that the wildlife was illegally taken, possessed, transported, or sold" (Kazmar, 2000:121). This means that penalties are imposed equally on criminals and low-level actors within smuggling networks, since individuals assisting in wildlife smuggling are punished to the same degree for transporting or storing specimens. Regardless of their efficacy, these laws may obscure the nuances of individual cases and fail to take circumstances into consideration. For this reason, U.S. environmental laws have garnered widespread criticism. The Lacey Act was criticised for becoming the 'poster child for the phenomenon of overcriminalisation' (Luppino-Esposito, 2012; Dieterle, 2016). Criminologists caution that more punitive laws like those adopted in the U.S. are not automatically more just or effective and higher numbers of arrests should not be taken for granted as indicators of success. They have also long expressed concerns that these drastic environmental laws would lead to overcriminalisation and disproportionately affect at-risk people (Hübschle & Margulies, 2023; Hübschle, 2017; Lavorgna, 2017). South African conservationists and agencies like the ISS believe that adopting draconian policies or militarised responses will alienate communities and promote fortress conservation. On the one hand, the U.S. example demonstrates the value of institutional integration, security capacity, strong prosecutorial options and international reach – elements that increase the state's ability to tackle organised trafficking. On the other hand, the U.S. emphasis on punitive instruments provides a cautionary lesson for other CITES states. Transplanting such measures into contexts marked by different histories of dispossession, limited enforcement capacity, or precarious livelihoods may exacerbate social harms and generate resistance to conservation objectives.

Experts observed that conservation law in South Africa tends to criminalise all forms of unauthorised harvesting, regardless of the individual's intentions or circumstances. However, a blanket zero-tolerance approach is often contested by communities whose traditional practices and livelihoods depend on plants as resources. While TOPS (Threatened or Protected Species) Regulations curb the illegal trade, the listing system imposes burdens on established, legal growers and customary harvesters

whilst large-scale harvesters sometimes escape scrutiny. Olivia expressed her understanding of these dynamics as follows (Researcher 1, 2024):

I would say the people who are bearing the brunt of law enforcement are our local harvesters. They're the ones who are being targeted on the road. It's just one after the other: Our local harvesters going to prison, being fined, pleading guilty, paying the fine, doing it again.

This draws attention to an issue that experts, law enforcement officials, legislators, and communities struggle to navigate, that addressing the plant poaching crisis locally inadvertently leads to unequal, selective enforcement. In Bruwer's (2023) report, respondents linked the actions of local harvesters to lingering historical inequalities. They observed how white farmers were able to continue accumulating wealth from the Karoo's natural resources whilst communities were left with few options within the towns (Bruwer, 2023:8).

Making prosecutors or investigators responsible for determining whether someone in possession of wildlife knows or 'should know' that a species is protected introduces substantial risk – personal biases and work incentives may lead them to assume criminal intent where none exists. Olivia highlighted the problem with applying regulations universally without regard for individual circumstances: "I've seen people who have various species from southern Africa wild harvested in bulk and it's like... so are you the syndicate leader? Are you the organiser? Or are you just the guy who bought it when he's got zero understanding of where you got your plants from?" (Researcher 1, 2024). When someone is found in possession of protected plants, authorities cannot always determine where they sourced them or whether they were aware of the regulations. In areas where plant collection is a last resort for people desperate to eke out a living, adopting a "guilty until proven innocent" attitude can have devastating consequences. When people in the Northern Cape are fined or detained for illegal harvesting on behalf of a syndicate, it may have a knock-on effect on households who rely on their income.

Since the shift from fines to incarceration, more individuals are serving time in jail for plant trafficking. Olivia added that, "Now they're getting direct imprisonment; there was a truck driver who got eight years, I think, for a certain number of protected species"

(Researcher 1, 2024). At the time of writing, there had been several cases of individuals receiving the same sentence after being caught in possession of protected plants. In 2020, two men (aged 28 and 30) received eight years of imprisonment with two years suspended for transporting *Conophytum Pellucidum* and *Conophytum Pagea* plants worth approximately R100 000 (SAPS, 2023). In 2025, another eight years were handed down to a man in Springbok for contravening the Northern Cape Nature Conservation Act 9 of 2009 by transporting and attempting to sell 2,863 *Conophytum*. The prosecutor in this case emphasised that the State should “send a strong message to poachers and environmental criminals” (NPA, 2025). The National Prosecuting Authority welcomed the sentence and claimed that it reaffirmed the State’s commitment to treating environmental crimes with the “seriousness they deserve” (NPA, 2025).

On 3 July 2025, four foreign nationals from Zimbabwe were each sentenced to fifteen years. The men each received ten years of direct imprisonment for contravention of National Environmental Management Act 107 of 1998 and the Northern Cape Nature Conservation Act 9 of 2009, five years for unlawful entry into a protected area under the National Environmental Management Protected Areas Act 57 of 2003, and two years for being unlawfully present in the country according to the Immigration Act 13 of 2002. The last two sentences will run concurrently. Both the National Prosecuting Authority and the Minister of Forestry, Fisheries and the Environment, Dion George, welcomed the sentence. George described it as a ‘critical milestone’. He stated that it “sends a clear message: those who profit from exploiting our natural heritage will face serious consequences” (DFFE, 2025). The NPA took the same standpoint in their statement, which claimed that “this sentence sends a strong message that environmental crimes will not be tolerated” (Senokoatsane, 2025). The Democratic Alliance, the country’s second largest political party, supported George and added that “strong sentences such as these are important deterrents and should be commended” (de Blocq, 2025). Rather than showing how these sentences reflected changes in South African law, it appeared as though the case had been transformed

In their statement on the 15-year sentences, the DA voiced their concern that enforcement efforts are faltering following the suspension of key law enforcement officers from the Stock Theft and Endangered Species Units in the Northern Cape (de Blocq, 2025). This likely referred in part to the arrest of Captain Karel du Toit in May of 2024. Du Toit, who was then the commander of the Northern Cape Stock Theft and

Endangered Species Unit, was arrested alongside Warrant Officer Leonard Landrew on charges of defeating the ends of justice, theft, fraud, corruption, and contravention of the Tourism Act (Jordan, 2024). Du Toit had handled 301 cases of plant poaching up to that point. He was also the director of Pillansii Tours, a private tour company, and a member of the South African Hunters and Game Conservation Association. The Association supposedly introduced a system in which financial benefits could be received through court-imposed donations linked to plea agreements (Jordan, 2024:1). Du Toit's unit is said to have shifted their focus away from plants following his arrest (Welz, 2025). One Sunday Times article claimed that Du Toit's superiors had been aware of his activities and that he had been using the tour company to monitor potential illegal harvesting (Jordan, 2024). At the same time, a senior botanical horticulturist from SANBI, Adam Harrower, was also apparently accused of fraud and corruption for submitting fraudulent invoices in the name of his wife's landscaping company for work that was done for du Toit's Stock Theft and Endangered Species Unit (Human, 2024). The outcome of the court proceedings has yet to be released. Both cases were widely reported on and frequently brought up in conversations and interviews with Karoo residents. Regardless of what the outcome of Du Toit and Harrower's cases will be, these cases (amongst others) had a noticeable impact on public perceptions and morale within NGOs.

Individuals from organisations such as SANBI and the EWT showed how new legislation led to a decrease in poaching incidents, but legislators faced significant criticism for implementing prison sentences that were out of proportion to more 'serious' crimes. Hübschle and Margulies (2023) indicate that there is little evidence to suggest that classifying succulent poaching offences as serious crimes effectively reduces the number of instances or improves conservation outcomes (Hübschle & Margulies, 2023:5). The serious offence designation positively impacts the state's ability to secure international support, justify intensified enforcement, and implement harsher penalties (Hübschle & Margulies, 2023:4). Serious crimes – such as murder, rape, and major drug offences – that inflict significant harm are defined differently depending on the jurisdiction. Criticisms have been raised about the type of crimes that are categorised as serious offences, with many believing that wildlife trafficking should not be included. This is because heavier sentencing and serious crime designations may impede rehabilitation and restorative justice (Hübschle & Margulies, 2023:4).

Current enforcement practices instantiate racialized environmental justice: they continue colonial and apartheid patterns by punishing poor, majority black populations while affluent or foreign actors in the illicit trade go unpunished. Olivia summed up the situation for both harvesters and communities in the Karoo by comparing their experiences and thoughts to those of people affected by rhino poaching (Researcher 1, 2024):

They're bearing the brunt of trying to make a living. It's like the plants have more value than like our local humans, which is terrible. It's the thought, you know, 'why are rhinos protected to the lengths that they are, and you've got neighbouring communities that don't have running water or access to food'.

The sense that conservationists and the state prioritised wild animals more than the lives of black and coloured people in rural areas was also expressed by participants in Hübschle and Shearing's (2018) report on rural communities participating in rhino-horn trafficking. One trafficker in their study lamented about rhino not only being valued more than black human beings but also being a business from which farmers, foreign tourists, investors and the state were able to benefit while local communities were largely left destitute (Hübschle & Shearing, 2018).

Shifts toward sterner penalties, tighter permitting, and more visible monitoring reflected a political and institutional desire to curb an acute biodiversity crisis, but they also exposed governance gaps – fragmented national and provincial regulations, delays in listings, permit obstacles, and porous cross-border protections – that blunted enforcement effectiveness and risked over-criminalising vulnerable actors. Uneven sentencing and the focus on frontline actors left transnational criminal syndicates less affected. The permit regime, while central to enforcement, in practice burdened legitimate nurseries and conscientious plant lovers and provided avenues for fraud and evasion. It was evident that the most effective way of addressing the illegal plant trade would involve combining the strengthening of enforcement capacity (through training customs officials and prosecutors, as well as digitising permits), harmonised protection efforts, and anticipatory listing where appropriate with community-centred, harm-reduction and livelihood strategies that reduce the supply of harvesters rather than simply punishing them.

Chapter 6: Caring for Plants, Caring for People

Preventing wild harvesting and mitigating its effects becomes increasingly difficult when it is impossible to envision an end to the illegal plant trade. How do conservationists and researchers keep up the fight against illegal harvesting when they find themselves overworked and demotivated? The impact of the wildlife trade on researchers and conservationists is understudied and thus tends to be overlooked in reports and policy documents. In her research report for ENACT, Bruwer (2023) found that the lack of resources and staff contributed to conservation and law enforcement officials' experiences of demoralisation, suspicion, and burn out. Those who dedicated their lives to saving and protecting the natural world reported that the illegal trade took a toll on their mental and emotional wellbeing by forcing them to witness not only the destruction caused by wild harvesting but also the impact that regulations had on local people. Researchers sympathised with locals who were facing imprisonment and their families who had to carry on without them.

Studies on the effects of wildlife crime on researchers' mental health are centred more on animal poaching and trafficking. Smith and Heys (2022) assert that researching the trade and trafficking of natural resources can be emotionally taxing for both researchers and participants. Researching wildlife trafficking requires individuals to frequently visit sites of harvested and trafficked wildlife to collect data (Smith & Heys, 2022:2). Few individuals are prepared for personally witnessing the harm inflicted on animals. Exposure to traumatic contexts can take a significant mental and physical toll and cause desensitisation or suppression (Smith & Heys, 2022:2). Studies suggest that researchers are unprepared and unsupported, leading them to seek support from friends and colleagues after traumatic experiences in the field, thus passing on the burden of harms (Smith & Heys, 2022:2). Extensive training and support could address the mental burden of wildlife trafficking fieldwork. At present, there remain no standardised procedures for supporting researchers in this field (Smith & Heys, 2022:2). When it comes to plant trafficking, understanding the impact on researchers' mental and physical wellbeing can be complex. The mental and physical burden of researching crimes and harms associated with plants appeared to be multifaceted.

Despite working on similar projects aimed at solving a central problem, conservation staff in the Karoo did not always meet eye to eye on how wildlife crime

should be managed. Experts were guided not only by their personal values and beliefs, but also by the requirements of their employers and funders, and the needs of various actors in communities. Researcher 2, Claire, pointed out the difficulties that arose within the conservation sector (Researcher 2, 2024):

I think succulents have been super interesting in that respect. I mean, first of all, having worked in a conservation entity and being exposed to multiple other conservation entities, there are massive egos. And you would think, because they all want to save the Earth, they can get along, but actually there's a lot of competition and I think some of that stems from funding, which everyone's competing for.

In general, limited funding and access to resources appeared to be one of the biggest obstacles preventing staff and researchers from implementing their approaches to the succulent trade. Individual goals sometimes caused conflict and competition, which added to the stress of their work. Nonetheless, the common goal of conserving the Karoo allowed experts to find ways of overcoming this hurdle by collaborating. Tsing (2005:13) observes that “conservation inspires collaborations among scientists, business, forest dwellers, state regulators, the public, and nonhumans. Through the frictions of such collaborations, global conservation projects – like other forms of traveling knowledge – gain their shape,” suggesting that the messy and sometimes conflictual interactions that occur when actors with different interests are brought together do not simply create obstacles. Rather, they are generative. Karoo plants forced global collaborations to form around issues that were, at the best of times, highly contentious.

Despite their collaborative efforts, research entities and NGOs were still overburdened with the number of plants entering botanical gardens and nature reserves after being confiscated from traffickers. Law enforcement and conservation staff received thousands of plants, many of which were only clinging onto life when they arrived in the Western Cape to be processed. The ‘caretakers’ of wild succulents and flowers did not have the staff, infrastructure, or security to balance saving all of the individuals under their care with other responsibilities (Bruwer, 2023:19). Claire, Researcher 2, explained that “they had day jobs and then all of a sudden they were counting plants, taking photos, counting plants, taking photos and trying to keep them alive” (Researcher 2, 2024).

Conservation staff, many of whom resided in the Karoo and had lived there for decades, struggled to safeguard their mental and physical wellbeing: “It was sad to see how overworked and tired and *moedeloos* a lot of the people that I spoke to were” (Researcher 2, 2024). People had not expected to have a visceral reaction to the destruction. However, by taking shifts and working with volunteers, they managed to continue caring for and protecting seized plants. Meanwhile, the numbers decreased due to enforcement efforts, giving them what they considered to be a much-needed break.

Wildlife crime researchers like Claire experienced distrust and hostility when they attempted to enter communities and the conservation space (Researcher 2, 2024):

For me, probably the toughest part was initially, and I'm sure you've seen this as a researcher, where you come as an outsider and there's actually quite a lot of animosity, of people literally outright saying ‘What could you possibly do to help us’, and so that was quite demotivating.

Nonetheless, this animosity did not stop her from following through with her research, which contributed significantly to guiding conservation approaches: “We got there in the end. They're using my reports often to benchmark what they've achieved; all of the recommendations came from the people that I did the interviews with. So, for me, getting that trust was quite tiring and demotivating, but eventually it happened”. Struggling through demotivation was thus framed as a small sacrifice in relation to the reward of seeing one's work making a difference.

Balancing care for nature and care for people was cited as the greatest difficulty that researchers and conservation staff faced. On the one hand, they constantly witnessed the damage that the illegal plant trade on the fragile Karoo environment and recognised the dire need to save the region's biodiversity and genetic resources. On the other hand, they saw poor harvesters being imprisoned for years after trying to provide for their families (Researcher 2, 2024):

I mean, I'm sure you're the same as someone who loves nature, it's really depressing to constantly have to work for a year on this destruction that you don't see any end to and then also knowing (and that's something that I struggle with in all my research) that the people who are the foot soldiers, the harvesters – I have

a little bit less sympathy with the person who's willing to chop off a rhino's face – these are people who are replaceable, who mean nothing to the people that they're working for and they don't have a lot of alternatives. And then we're putting breadwinners in jail because we can't offer them anything better. So that's the shitty part, but it's part of my job. So, how I deal with it? I don't know. You carry on because you have no choice. You do things that you enjoy. Because it can consume you, and it has consumed many people.

For a moment, Claire appeared to contemplate how she had stayed hopeful and motivated throughout her years of researching wildlife crime and experiencing this inner conflict. She did not feel that she had experienced burnout to the same degree as others in her field, who she suggested were not managing to protect their mental wellbeing. She believed that continuing her work was not an option, but that doing enjoyable things outside of it allowed her to seek wellbeing and avoid becoming completely consumed. She made no mention of receiving external support.

Conservation staff were sometimes forced to change positions or move to other towns to distance themselves from plant trafficking. One conservationist, Sonwabile, expressed finding it impossible to keep his position as a reserve manager in a small Karoo town (Conservationist 1, 2025). His job had placed him far away from his home and many of his family members. He also expressed having a limited understanding of the Afrikaans language, which he felt hindered his communication and ability to connect with colleagues in the office and locals. At the time of our discussion, he was waiting to hear if he had been accepted for a better position in the conservation sector. Sonwabile believed that moving away from the Karoo was a necessary change and one that would improve his physical and mental wellbeing (Conservationist 1, 2025). Evidently, the burden that the illegal plant trade placed on those seeking meaningful alternatives to it was not being adequately addressed, leading some to look for opportunities elsewhere. This meant that there were fewer people available in the Karoo to care for plants and assist in enforcement.

Researchers were doubtful that plant trafficking would ever reach a conclusion if current dynamics continued (Researcher 2, 2024):

We're dealing with this because we don't have a whole-of-government approach

to actually uplifting these communities, or the country for that matter. And so, until people's circumstances change, we're going to be (and it's terrible saying this is an organised crime researcher) but I firmly believe that we're going to be talking about this for the next 5000 years. Very little will have changed unless there are fundamental changes in how people consume biodiversity and what they can actually do as an alternative to feed their families.”

Despite this pessimism over the future of the plant trade, there was evidently a clear sense of what needed to be done going forward. Researcher 3, Frida, found that the only option was to push on despite her doubts: “I must say I’m not very optimistic, but I go on. I continue doing my research and I try to do whatever I can to help stop it” (Researcher 3, 2025). Researcher 1, Olivia, was hopeful that change would come in the future: “We’re just doing our best with the resources that we have, but I think there’s a lot to come” (Researcher 1, 2024). She was aware of how slowly reports were produced and policies implemented (in relation to the speed of harvesting), but she was looking forward to seeing whether the next stages of funding would enable organisations to have a more direct impact.

Expressions of hopelessness were directly contrasted with the work that conservation staff described and were observed to be doing. Throughout my interviews, they displayed an almost unwavering commitment to solving the problem of the illegal plant trade despite the difficulties they faced. They spoke clearly and passionately about successful enforcement efforts, changes to regulations, new listings, and proposals for further community engagement. Their friendliness and eagerness to introduce new researchers to the field could also be read as part of their effort to ensure that their work would be continued in the future. Sonwabile and Francis, who both expressed that their jobs as reserve managers were physically and emotionally taxing, outlined the necessity of sticking to it in hope of seeing a brighter future for the people and plants of the Karoo.

In *Staying with the Trouble: Making Kin in the Cthulucene* (2016), Haraway expresses an understanding impatience with the cynical “game over” attitude that she has observed many scientists adopt in response to the Anthropocene and Capitalocene (Haraway, 2016:3). She points out that scientists couple this defeatism with what is simultaneously a tireless commitment to “multispecies flourishing” (Haraway, 2016:3). Self-fulfilling defeatist discourses are sometimes combined with technofixes to “co-infect

any possible common imagination”, thus turning us away from forms of thinking that will foster multispecies ecojustice (Haraway, 2016:56). Witnessing the death of endemic species and the decline of biodiversity led caretakers and researchers to feel defeated, but their innovative ideas and refusal to give up offered a glimpse of a more hopeful future for Karoo plants. They demonstrated that, at the core of multispecies ecojustice, is a deep sense of care for plants and people alike. This chapter centred the emotional, practical, and ethical labour of those charged with caring for Karoo plants. It documented how conservationists, reserve managers, and researchers confront repeated exposure to ecological loss, heavy workloads, and the moral complexity of policing harms that often involve neighbours and acquaintances. These everyday tensions reveal that conservation is not only a technical endeavour but also sustained, embodied labour. To properly address the illegal plant trade, conservation organisations should also invest in the people who do the work. Durable strategies for safeguarding Karoo flora must start from this reality, that conservation is as much about sustaining human capacities to care as it is about protecting species.

Conclusion

In recognising that caring for plants requires caring for people, this thesis argues for conservation approaches that not only protect biodiversity but also confront the inequalities that continue to shape the Karoo. The harms that the illegal plant trade produces can neither be separated neatly into ecological loss on the one hand and social injustice on the other, nor be addressed solely by punitive measures. The illegal harvesting of endemic plants from the Karoo landscape diminished genetic diversity and undermined ecological resilience. At the same time, these ecological losses had social reverberations. Transnational demand, local precarity, weakly harmonised regulation, and adaptive criminal networks interacted to produce compounded harm.

Framing problems in the Karoo through the lens of socioecological harm clarifies why conservation measures that ignore social drivers may produce a net increase in harm. Protective measures applied without attention to social context can conserve particular taxa on paper while increasing the precarity of the people who live with them, thus weakening local stewardship and delegitimising conservation regimes. From the evidence presented, a harm reduction emerges as a promising approach. This would involve refocusing the aims of interventions away from punishment as the default remedy and toward strategies that account for the complex dynamics that characterise the Karoo. Practically, researchers suggested that this may require a reweighting of enforcement priorities to target organisers, exporters, and buyers rather than primarily arresting low-level harvesters. Cross-border cooperation, improved customs capacity, and greater access to resources are essential to reach actors who are at the core of the illegal trade. At the same time, regulatory systems must be harmonised and modernised to close loopholes and reduce collateral burdens on legitimate actors.

Technological tools should be used selectively and ethically. Faster, clearer procedures for species listing and digitised permitting systems will reduce opportunities for fraud, ease compliance for legitimate nurseries, and make enforcement more predictable. Collaborations with online platforms will enhance listing and takedown protocols, while piloting detection and web-scraping tools in tandem with taxonomic experts can improve monitoring of online markets. Physical screening at ports of exit, investment in detection dogs and targeted airport checks are practical complements to online monitoring. Yet these measures must be accompanied by safeguards against

overreliance on imperfect automated systems and should be deployed with transparency and avenues for remedy to prevent accusations against reliable sellers and avoid penalising legitimate trade.

Cases of law enforcement officials, conservationists, and horticulturists being arrested for participating in or benefiting from the illegal plant trade reframed the moral economy of harvesting, casting the problem as one of powerful actors whose profit-seeking corroded ecosystems and institutional legitimacy. Knowledge of individuals in positions of power participating in the illegal plant trade played a significant role in hardening perceptions of harvesters as greedy, selfish criminals rather than poor, desperate individuals. It also deepened distrust of formal conservation and governance structures, making state-led interventions appear hypocritical if those institutions were believed to benefit from the same illicit economy they publicly condemned.

Rather than repeating the common narrative that the harvesters who were being arrested were facing the necessary consequences of stealing fauna, the conservationists I interviewed recentred the human lives and livelihoods that were affected by the law. Locals did not believe that plants (like rhino or pangolin or abalone), should receive less protection, but rather that the same funding and regulations dedicated to them were not being invested in Karoo communities whose sources of subsistence had repeatedly been cut off by conservation policies throughout history. Being able to harvest, sell, or use wildlife from the immediate environment was one of the few means locals had to alleviate or escape economic inequalities.

The impact of the permit system, ToPS listings, and CITES regulations on local people and businesses revealed how governance choices influenced livelihoods. Employment initiatives, like the programme that employed monitors in Nieuwoudtville, offset socioecological harms by reducing the likelihood that people would participate in the illegal plant trade. Conservation organisations gave locals opportunities to not only earn an income but also to interact with the natural environment in ways that felt rewarding. However, the experiences of monitors indicated that these initiatives could only have a limited effect if they were not paired with policies aimed at reducing inequalities. Despite indicating that they benefited from greater freedom from economic poverty, Karoo residents were not necessarily able to lead the kind of lives they wanted to lead. Deeper qualitative and quantitative work on motivations, aspirations, and status is required.

Community monitoring and employment in propagation, habitat restoration, veld guiding and other conservation-linked enterprises can generate local benefits and create positive reputational incentives to conserve. Investments in rural infrastructure and access to services and local retail opportunities would further play a role in reducing the attractiveness of illicit incomes. Rebuilding trust between conservation authorities and residents – including through community engagement and transparent benefit-sharing agreements – will prove to be essential for long-term success. Researchers believed that durable protection for endemic plants would only come when local people could see conservation as compatible with their well-being and aspirations. Beneficiation programmes must therefore be designed in genuine partnership with communities, co-produced rather than imposed, so that rules are not only perceived as fair by scholars but experienced as fair by locals. Where low-level harvesters are apprehended, proportional and restorative justice approaches can reduce the social harms associated with incarceration and maintain conservation efforts without inflicting further harm on households.

Some conservationists argued that the incentive for locals to engage in illegal harvesting would remain present so long as consumer demand (in the global North and amongst wealthy locals) continued. Demand-side studies of collector cultures and online marketplaces are still essential. It remains to be seen whether collector demand will die down in time to prevent the extinction of more succulent species.

In sum, while recent legislative changes in South Africa aimed to curb the illegal trade in indigenous plants, they raised significant ethical, social, and legal concerns. The shift toward stricter penalties and incarceration may have deterred some forms of trafficking, but it also risked entrenching existing inequalities and inflicting disproportionate punishment on vulnerable individuals, especially poor local harvesters. Environmental laws and biodiversity regulations in the Karoo that aimed to protect indigenous flora played a role in criminalising practices of resource use. As respondents have shown, enforcement mechanisms often failed to account for the socioeconomic realities that drove participation in the plant trade, resulting in selective justice and uneven application of the law. Although conservation goals are urgent and necessary, they must be balanced against the need for social and ecological justice. Anticipatory policies, targeted at powerful actors, sensitive to local livelihoods, and willing to experiment with restorative and harm reduction frameworks stand the best chance of

reducing socioecological harm. Conservation that defaults to incarceration and prohibition risks reproducing the very injustices that feed illicit trade, undermining both equity and long-term biodiversity outcomes. By addressing the interconnectedness of ecological and social wellbeing, conservation efforts can avoid amplifying the harms they seek to eliminate and instead secure a future in which the Karoo's endemic flora and the communities that share that landscape can thrive together.

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