



Department of Sociology and Social Anthropology
Honours Research Project

Herding as a contribution to sustainable agriculture in the Karoo: an
exploration of key debates

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Abstract

This study explores herding as a land and livestock management strategy on commercial farms in the Karoo through an extensive literature review and interviews with nine experts and farmers. The study draws on the concepts of sustainable development and sustainable agriculture in the Karoo (the latter understood to encompass biodiversity conservation, human-wildlife conflict management, and social justice) to explore the history of and debates related to herding. These concern rangeland management, climate change, farmer-jackal conflict, and herding's economic viability. The various social issues discussed include perceptions of the role, the skills involved in herding, and farmer-farm worker dynamics that relate to security of tenure, land reform, social responsibility, and physical security. The history of herding and its presence on the communal rangelands forms an important part of the investigation. Herding emerges as a favourable land and livestock management tool because it offers farmers flexibility, mobility, and a non-lethal approach to predator control. However, many commercial farmers associate increased numbers of farm workers with undesired responsibility, loss of control, and various security concerns. Going forward, further research is required on the appeal of herding for farm workers, as well as the reasons for farmers' reluctance and how it could be overcome.

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Chapter 1: Introduction

This research project explores the practicality and desirability of herding as a method of land and livestock management on commercial farms in the Karoo and its contribution to sustainable agriculture in this dryland region. Herding in this project refers to the practice of managing livestock herds by allowing them to graze across the rangeland under the supervision of human herders, rather than confining them to fixed, fenced camps. While herding is still widely practised in the small areas set aside historically in Namaqualand as ‘coloured reserves’, on the commercial farms, which extend over most of the Karoo, the primary method of livestock management involves fenced camps and rotational grazing. In recent years, however, there has been a growing interest in herding on commercial farms in the Karoo, with advocates such as the Landmark Foundation and the Herding Academy at the South African College for Tourism promoting a revival of the practice.

My interest in herding was ignited in February 2020 when representatives from the Landmark Foundation gave a presentation on their project, *Shepherding back our biodiversity*, at the weekly Cosmopolitan Karoo Research Forum of the SARChI Chair in the Sociology of Land, Environment, and Sustainable Development (hereafter SARChI Chair). The Landmark Foundation is a conservation NGO active in the Western and Eastern Cape of South Africa. The presenters discussed their observations after four years of human herding on their farm outside Beaufort West in the Western Cape. What captured my attention was how this simple and historical practice had endured as one of the most effective land and livestock management tools, yet the Foundation reported a reluctance towards it among farmers in the Karoo.

This study explores the value of herding for commercial farmings by assessing the debates about the environmental impacts of grazing, optimal predator management, and herding’s economic viability as well as the social dynamics around herding on commercial farms. My assessment of herding’s ecological value focuses on debates around rangeland conservation and farmer-jackal conflict. My investigation of the social dynamics of herding covers the issues that emerge from my literature review and interviews with leading researchers, conservation practitioners, and farmers. These social issues involve perceptions of the role of the herder, farmer-farm worker dynamics, and farmer concerns around security and responsibility. As discussed further below, the views of the herders themselves is a matter for further research.

After a brief discussion of the impacts that COVID-19 had on my research, this chapter introduces the reader to the ecology of the Karoo and the social and economic characteristics of the region at large. Thereafter, I present my research problem and introduce the core concepts framing this project. Lastly, this chapter discusses my research methods and reflects on research ethics and the limitations of my study. In Chapter 2, I set out my findings on herding, starting with a brief historical overview and discussion of herding on the communal rangelands of Namaqualand. I then review the debates on the value of herding on commercial farms in the Karoo, integrating my interviews with my informants with my findings from the literature. In Chapter 3, I discuss my findings in relation to my research questions and conclude by considering how herding can contribute to sustainable agriculture in the Karoo.

1.1. Special implications of COVID-19 for my research

This study was conducted while South Africa was in a National State of Disaster due to the global outbreak of COVID-19, as declared by Dr Nkosazana Dlamini Zuma (Department of Cooperative Governance and Traditional Affairs, 2020). Originally, I planned to do fieldwork involving both farmers and herders, but the COVID-19 pandemic restrictions required me to change my methods. In particular, I had to substitute telephonic and online interviews for observation and face-to-face interviews in the field, which skewed my sample away from the herders themselves, towards experts and farmers. The rationale for using email and telephone interviews instead of face-to-face interviews was based on the ethical and health concerns of the possibility of COVID-19 transmission between myself and my informants. It was also consistent with national restrictions arising from the COVID-19 pandemic that limited my ability to travel to the Karoo and conduct face-to-face interviews in the field.

Limitations of my research that are a result of the restrictions and health risks associated with COVID-19 are discussed at various points in this project. It is addressed first in my Research methodology section in Chapter 1, and, again, it is reflected on in my Reflections on the findings section in Chapter 3. The project reported on here can be read as a pilot study for a larger MA thesis, in which the contribution of herding to sustainable agriculture on commercial farms can be investigated further.

1.2. Contextual Background: Overview of the Karoo

The Karoo is an arid to semi-arid region in South Africa comprising about 400 000km² and taking up roughly 40% of South Africa's land surface, and is made up of two biomes, the Succulent Karoo and the Nama-Karoo (Atkinson, 2016:200) (See figure 1 below). Despite the widespread impression of the Karoo as a desert-like region, the Succulent Karoo is a biodiversity hotspot. Its large variety of shrubs and especially succulents renders it an area of particular interest for ecologists (Atkinson, 2016:200; Walker, Milton, O'Connor, Maguire & Dean, 2018:160). The agricultural sector, which mostly consists of sheep and goat farming for meat and wool production, is a major contributor to the local economy and dominates much of the landscape in the Succulent and Nama-Karoo biomes. Both biomes are characterised by vast open land, low rainfall, and a climate with extreme temperatures. A major challenge for livestock farmers and a defining characteristic of the Succulent Karoo is the aridity. The Succulent Karoo is characterised by low winter-rainfall and significantly dryer summers than the Nama-Karoo, which is characterised by a more unpredictable climate. Combatting these unpredictable weather patterns is no easy feat for livestock farmers who depend on the rainfall to replenish the rangeland, and the region experiences multi-decadal dry periods which are expected to be exacerbated by climate change (Walker *et al.*, 2018:165).

Debates concerning the prevalence of rangeland degradation underly the disputes over optimal rangeland management practices. Through the monitoring of changes in land use, land cover, and vegetation in the Karoo, Hoffman, Skowno, Bell and Mashele (2018:218) were able to determine that vegetation cover over the Karoo has actually increased, or at least remained stable, over the last century. They attribute this largely to the conservation efforts of farmers and the state's endorsement of lowered stocking rates in this time. However, there has been a change in the type of vegetation present, with the most significant shift reported in the eastern parts of the Nama-Karoo, where small shrubs are increasingly being replaced with perennial grasses (Hoffman, 2014:717; Hoffman *et al.*, 2018:219). Du Toit and O'Connor (2014:459) argue that this second shift is primarily due to higher rainfall in the past 30 years compared to the preceding 81 years, and lowered stocking rates.

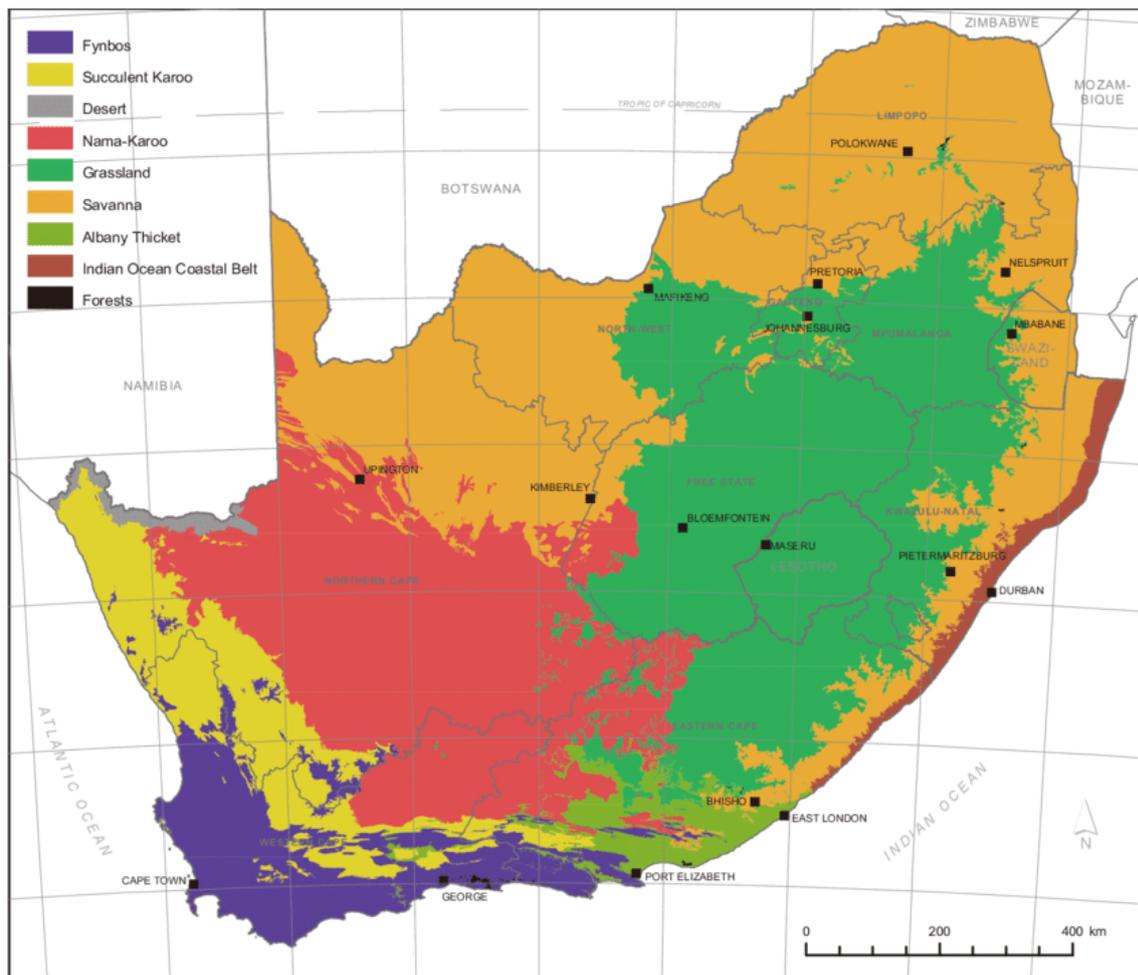


Figure 1: South Africa's biomes, showing the Succulent and Nama Karoo in the west (Source: Rutherford, Mucina & Powrie, 2006)

The Karoo region is often thought of as a “non-place” (Walker *et al.*, 2018:158). This is a misperception, as the Karoo holds around 60 small towns, villages, and has been home to people for millennia (Walker *et al.*, 2018:161). Beinart (2018:191) stresses the region’s historical significance in terms of the colonisation of South Africa and the development of the Cape Colony in the 1800s. The perception of the Karoo as a non-place has, however, informed development initiatives driven by external players to the area in recent decades, including the Square Kilometre Array (SKA) radio astronomy project near the towns of Carnarvon, Williston, and Vanwyksvlei, renewable energy hotspots such as those on the doorstep of De Aar and Loeriesfontein, and potential shale-gas mining projects in the pipeline in the Northern and Western Cape.

These international projects and land-use changes have drawn social scientists’ attention to the economic and political decline that many forgotten towns of the Karoo have experienced in

recent decades. While Walker *et al.* (2018:165) stress that the various subregions and municipalities of the Karoo cannot be viewed as one homogenous area, they have identified several features that provide insight into the social dynamics of the Karoo as a whole. There is a strong sense of place among residents of the small towns of the Karoo. While each one has its own distinct character, in part due to the long distances between them, these towns face similar challenges, such as “high levels of poverty and unemployment ... a heavy dependence on social grants and generally low education levels” (Walker *et al.*, 2018:166). Alcohol abuse is referred to by Walker *et al.* (2018:166) as a “regional pandemic”, which leads to associated health problems, including Foetal Alcohol Syndrome levels that are some of the highest in the world. Walker *et al.* (2018:166) also report that teenage pregnancy and high dropout rates from school are a concern in local communities, which validate the communities’ reported concerns about the vulnerability of the youth. Furthermore, *tik*¹ addiction is emerging as a challenge in many small towns in the Karoo (Walker *et al.*, 2018:166).

1.3. Research problem and research questions

The aim of this study is to explore the debates around the social, ecological, and economic benefits and drawbacks of herding as a land and livestock management strategy on commercial farms in the Karoo. The underlying concern guiding this study is what sustainable development can look like for the agricultural sector in the Karoo. While recognising debates about the optimal scale of farming in South Africa (Kirsten & Van Zyl, 1998; Cousins & Scoones, 2010), this project proceeds with the assumption that extensive commercial farming is likely to dominate the Karoo rangeland for the foreseeable future.

Since the late 19th century, when technological advancements such as windpumps and fencing were introduced to the Karoo, there has been a widespread shift from nomadic pastoralism to settled commercial farming (Walker *et al.*, 2018). The predominant land and livestock management practices on commercial farms today include the confinement of livestock to fenced camps, along with various forms of rotational grazing to prevent overgrazing within the camps. Predator management is another concern, with many Karoo farmers reporting increased

¹ *Tik* is the street name for crystal methamphetamine, a highly addictive recreational drug that stimulates the central nervous system.

predator numbers since the 1990s (Terblanche, 2020:9). Lethal methods such as hunting and trapping are widely employed by farmers attempting to control livestock depredation.

Herding has been proposed as a more sustainable method of farming with livestock for three main reasons. Firstly, herding can maintain the ecological health of the rangeland by preventing overgrazing and area-selective grazing by livestock. In the context of climate change, it is seen as an especially important management tool for this arid to semi-arid zone. Secondly, herding offers a non-lethal alternative to predator control, thereby contributing to wildlife conservation and the maintenance of livelihoods through lowered stock losses. Thirdly, there is the potential to improve local residents' livelihoods by increasing job opportunities, upskilling farm workers, and preserving valuable indigenous knowledge through herding. Given the social and environmental challenges facing the Karoo, these are important considerations.

This project has been designed to explore these claims.

My primary research questions are as follows:

1. What are the key debates around herding as a method of livestock management on commercial farms?
 - a. What is the history of this practice in the Karoo?
 - b. What are the perceived social, environmental, and economic costs and benefits of herding in the contemporary period?
 - c. How do these costs and benefits compare with alternative systems of livestock management?
2. What are the reasons for the renewed interest in herding?

My third research question is an important part of this enquiry, although the online nature of my research this year due to COVID-19 has meant that I have had a limited opportunity to explore it:

3. Who are the herders, and to what extent have their voices been included in the debates?

1.3. Conceptual framework

In answering my research questions, I have identified a number of key concepts that guide this study. The first is sustainable development and the second, flowing from that, is sustainable agriculture. In the specific context of livestock farming in the Karoo, this concept requires engaging with issues of biodiversity conservation, human-wildlife conflict, and social justice.

1.3.1. Sustainable development

For the purpose of this project, I am working with an understanding of sustainable development that draws on the work of Holden, Linnerud and Banister (2017). They reject the understanding informing the United Nation's 2030 Agenda for Sustainable Development (United Nations, 2015) for several reasons. One is that there are too many goals that are not adequately prioritised (Holden *et al.*, 2017:214). Another is that there is an insufficient regard for the environmental limits of the planet, with no concrete goals aimed directly at protecting the environment (Holden *et al.*, 2017:214). Rather than reject the concept out of hand, however, Holden *et al.* (2017:214) suggest an alternative model of sustainable development based on three moral imperatives: "satisfying human needs, ensuring social equity, and respecting environmental limits". These three moral imperatives set non-negotiable constraints on individuals and organisations, and all three imperatives are equally important. Thus overachieving around one imperative cannot substitute for failing to meet another (Holden *et al.*, 2017:214).

Holden *et al.*'s (2017:218) understanding of satisfying human needs recognises but goes beyond meeting basic needs such as clean water, housing, health care, education, and physical and economic security. Rather, it emphasises a recognition of individuals' aspirations for a better quality of life and the need for creating policies that allow all people the freedom to live a life that they value (Holden *et al.*, 2017:218). Ensuring social equity rests on two principles. The first, the principle of equal participation, foregrounds "political liberties, liberty of conscience, freedom of association, [and] freedom and integrity of the person" (Holden *et al.*, 2017:218-219). The second principle of social equity concerns a fair and equitable distribution of income and wealth (Holden *et al.*, 2017:219). Determining what a fair and equal distribution of income and wealth is in the Karoo is a challenging topic that goes beyond the scope of this project;

however, creating decent livelihood paths for farm workers and their families is an important component.

Respecting environmental limits, the third of the three equally important and non-negotiable moral imperatives, is critically important, because ignoring this imperative will “most likely [prevent] future generations from having resources vital to meeting their needs” (Holden *et al.*, 2017:215). It is therefore inextricably linked to social justice and satisfying human needs for the generations to come. In an attempt to define environmental limits, Holden *et al.* (2017:220) draw on the ‘planetary boundaries’ that were identified by a large group of researchers at the Stockholm Resilience Centre, in an attempt to identify a safe space for humanity (2009). They identified nine planetary boundaries which should not be breached: “climate change, ocean acidification, stratospheric ozone depletion, interference with the global phosphorus and nitrogen cycles, rate of biodiversity loss, global freshwater use, land-system change, aerosol loading, and chemical pollution” (Holden *et al.*, 2017:220; Stockholm Resilience Centre, 2009). The crossing of each boundary could make earth less safe for humanity and take us further away from our endeavours to satisfy human needs (Stockholm Resilience Centre, 2009). There are various challenges in determining how these apply at the sub-planetary level, such as South Africa’s different biomes.

Of note is that Holden *et al.*’s model does not consider economic growth as a primary objective. It acknowledges that economic growth might be needed in particular contexts to contribute to advancing social equity and meeting human needs, but it also recognises that growth often contributes to the uneven distribution of income and thereby perpetuates inequality (Holden *et al.*, 2017:216). Economic activity, Holden *et al.* (2017:216) argue, is neither intrinsically sustainable nor unsustainable; however, the policies and laws that regulate economic activity generally produce growth that is unequal, inequitable, and therefore, unsustainable. In order to produce economic growth that is fair and just, economic activity must be bound by the same constraints as individual activity.

1.3.2. Sustainable agriculture

My understanding of sustainable agriculture builds on Holden *et al.*’s model of sustainable development by foregrounding the interconnectivity of the social and the ecological systems in the Karoo (O’Farrell, Le Maitre, Gelderblom., Bonora, Hoffman & Reyers, 2006:3). I have identified three issues that are central to my construction of sustainable agriculture in the

Karoo: biodiversity conservation, responsible human-wildlife conflict management, and social justice.

Biodiversity conservation

Biodiversity management in the Karoo is central to the conservation of the rangeland both as a goal in itself and for sustainable livelihoods. Biodiversity, or biological diversity, refers to the variety of living organisms, “whether naturally occurring or modified by humans”, that inhabit a specific area and contribute to the optimal functioning of the ecosystem (Swingland, 2001:378). Biodiversity conservation therefore entails preserving the ecological integrity of a region, which in the Karoo means that land-use changes should respect the need to conserve habitats that support a variety of intersecting species (Hoffman, 2014). For the commercial agricultural sector, the principles of biodiversity conservation should guide the way that livestock is managed, the natural resources of the rangeland used, and predation controls implemented. There is a responsibility on farmers to ensure that their farming practices cause the least harm possible and respect the environmental limits of the Karoo. This includes respecting the carrying capacity of the veld, which translates into limited stocking rates on farms. Similarly, the unpredictable rainfall in the Karoo sets limits on where and when veld can be grazed on by livestock.

These considerations are becoming more pressing in the context of climate change. While the extent of the effects of climate change in South Africa’s drylands are yet to be fully appreciated, the increase in levels of carbon dioxide is expected to favour trees over perennial grasses in the dryer parts of the Karoo (Beinart, 2018:199). In the eastern Karoo, where there has been an increase in summer rainfall, grassy areas are expected to expand and encroach on the Nama-Karoo biome (Walker *et al.*, 2018:171). Conradie, Piesse and Stephens (2019:10) point out that climate change is expected to result in lower rainfall in the western Karoo and higher temperatures throughout, both of which pose risks to production on commercial livestock farms. The threat of intensified aridity in the Karoo is engendering a sense of insecurity amongst farmers who fear they may be increasingly unable to rely on the cyclical nature of rainfall in the Karoo (Du Toit & O’Connor, 2014:453). Encouraging contemporary farmers to respect environmental limits means that future generations of farmers will have a better chance of being able to use the land productively and therefore satisfy their livelihood needs. However, the debates around best practice are complex and the unpredictability of climate change means

that farmers may need to be open to a more flexible use of space in the future, especially during drought years (O'Connor, 2018).

Hoffman (2014) argues that land cover changes have important implications for the land reform program. Without a scientific grazing management system in place, productivity and livelihood options on redistributed land can reduce significantly in a relatively short space of time if heavy grazing takes place (Hoffman, 2014:723). Similarly, if land is not used for productive purposes, vegetation cover can be negatively affected, resulting in bush-encroachment and increased shrubland cover (Hoffman, 2014:723). Hoffman (2014:725) calls on the state to plan for the future impacts of climate change while implementing the land reform process, the result of which, he argues, will be a very different climate by the end of the twenty-first century.

Human-wildlife conflict and animal rights

Conflict between predators and small livestock farmers is widely regarded as the primary source of human-wildlife conflict in the Karoo (McManus, Dickman, Gaynor, Smuts & Macdonald, 2014:1). Terblanche found that farmers in her study perceived an increase in predators in the Karoo since the 1990s (2020:9). Jackals and caracals are identified by Drouilly, Tafani, Natrass & O'Riain (2018:253) as being the top predators threatening small livestock farms in the Karoo with a range of specific social, economic, and ecological factors behind this. Drouilly *et al.* (2018:253) note that the number of permanent farm workers on sheep farms has declined, and there is a general lack of human presence around the livestock. Furthermore, the average commercial farm size has nearly doubled in the last 15 years. Coupling the expansion of farms with the decrease in farm workers understandably leaves herds of sheep increasingly vulnerable to predation.

At the same time, there has been a shift in the regulation of predator control practices (Drouilly *et al.*, 2018:250). Increased restrictions on lethal methods of control by the state means that farmers are less able to rely on the tried and tested methods of hunting and trapping of the previous century. Already in 1963, the Animals Protection Act 71 of 1963 (Union of South Africa, 1963) aimed to represent all animals as worthy of protection from unreasonable harm, regardless of whether they are endangered or not. According to Chapter 2 of the 2004 Biodiversity Act 10 of 2004 (Republic of South Africa, 2004:12), the live capture and killing of damage-causing animals such as jackals and caracals are permissible only if the landowner can prove that they have been unsuccessful in their attempts at non-lethal predator control. This Act restricts the use of gin traps, poison collars, darting, and foothold traps, among others,

stating that a permit is needed in order for these methods to be legally implemented (Republic of South Africa, 2004:16). Although the lethal hunting and trapping of animals are considered last resorts in the legislation, the use of these methods is widespread among desperate farmers in the Karoo who feel abandoned by the state and misunderstood by conservationists and academics alike (Terblanche, 2020:192). Unfortunately, many animals that are not the intended target of this hunting and trapping, such as the Cape leopard, are often caught in lethal contraptions on the Karoo farms (Smuts, n.d.:9).

Terblanche (2020:61) argues for the importance of sociological studies of human-wildlife conflict in the Karoo: the social world equates to more than relations among humans while the “social construction of a species and people’s construction of place” are inseparable. Human-wildlife conflict is closely connected to human-human conflict, with different approaches to predator management causing divisions among farmers in the Karoo as well as disputes between farmers and environmentalists. Terblanche also refers to the tension between biocentrism and anthropocentrism in predator management (2020:76) that is evident in the conflicting stances of environmentalists, drawing on “science”, and farmers, drawing on “local knowledge”. The first group understands that “the needs of humans are not more important than those of other living things” and that lethal methods are not effective in the long term as they upset the breeding hierarchy and can lead to an increased number of jackals (Terblanche, 2020:76). In contrast, farmers’ anthropocentric viewpoint understands humans’ needs as coming before other elements in nature and is based on their desires to protect their land and livelihoods at all cost (2020:76).

While social scientists such as Nattrass and Conradie (2015) acknowledge the importance of understanding the rationale of both parties, Terblanche suggests that the social function of hunting among farmers is also worthy of consideration (2020:162). She argues that although hunting is primarily a means of predator control, it also serves as an expression among Afrikaner men of tradition, values, and meanings “associated with the old colonial and apartheid order” (2020:162). Hunting thus promotes social cohesion within farmer communities, while nurturing a very specific and deeply valued connection with the Karoo environment (Terblanche, 2020:162).

Social justice

Although the meaning of social justice is alluded to in the previous section, the history of racial segregation in South Africa warrants a deeper understanding of this concept and its significance

for contemporary social dynamics in the Karoo. According to Charmaz, a social justice inquiry should attend to both the “inequity and equality, barriers and access, poverty and privilege, individual rights and the collective good, and their implications for suffering” (2012:291). Applying Holden *et al.*’s understanding of sustainable development to sustainable farming in the Karoo thus requires engaging with concerns around social justice related to unequal access to power and natural resources. The social issues in the Karoo are extremely complex and determining what social justice involves in this context is not a simple matter.

The context for this study is one where the racial hierarchy entrenched first under colonisation and later under apartheid is still economically and socially starkly evident (Walker *et al.*, 2018:166). The deteriorating economies of the towns in the Karoo have left many black residents living below the poverty line, depending on state grants (Walker *et al.*, 2018:166). Local job creation is urgently needed but the new land uses emerging in the region, notably astronomy and renewable energy, are not producing permanent jobs at the scale and appropriate level of skill that the region requires (Walker *et al.*, 2018). The commercial agricultural sector remains a significant employer but working conditions are generally very poor (Atkinson, 2007); many farmers are also struggling to maintain their own livelihoods and are looking to shed, not hire, more labour. Decades of colonialism, segregation and the legacy of apartheid have, furthermore, entrenched the racially skewed land ownership patterns still evident in the Karoo, with commercial farms predominantly white-owned (Walker *et al.*, 2018:168).

South Africa’s post-apartheid land reform programme is intended to address the unequal distribution of land between black and white farmers, yet it’s implementation has been slow and characterised by uncertainty (Conradie *et al.*, 2019:10). In the Northern Cape Province, the formal land reform programme had only succeeded in redistributing some 7% of the total commercial farmland to black beneficiaries by 2018 (Conradie *et al.*, 2019:10; Walker *et al.*, 2018:168). Many farms that have been redistributed are not managed correctly or equipped to handle communal grazing by multiple beneficiaries, resulting in land degradation and reduced grazing capacity (Walker *et al.*, 2018:168).

Conradie *et al.* argue that, in addition to the stressors of drought and a lack of state support, commercial farmers who depend wholly upon their land for their livelihoods are facing the additional stress of potentially being targeted for expropriation, if the proponents of this national policy change succeed (2019:10). Manyani (2020:86) also found that many farmers in her study are fearful about the future of their farms. The uncertainty surrounding the land

reform programme can incentivise farmers not to maintain the integrity of their land, reducing the viability of their farms for themselves and possible land reform beneficiaries in the future (Conradie *et al.*, 2019:10). Conradie *et al.* (2019:10) thus argue that the longer the land reform programme takes to implement, the greater the risk that land reform beneficiaries receive land that is unproductive. This will result in further marginalisation of the commercial farming sector in the Karoo, with land reform beneficiaries set up to fail before they have begun (Conradie *et al.*, 2019:11).

Another key social justice issue on commercial farms concerns the relationships between landowners and farm workers (Atkinson, 2007). Atkinson argues that “during the early twentieth century, the class of black and coloured farm workers was created deliberately as a marginalised and super-exploitable labour force” (2007:4, 8). The unskilled or semi-skilled nature of most farm work means that farm workers have little security or bargaining power as landowners can replace them very easily. Furthermore, there has been a long-term trend of job shedding on farms since the 1990s, with 140 000 regular farm jobs lost between 1988 and 1999 (Atkinson, 2007:1). Cousins, Genis and Clarke (2018:1) concur that, although the number of farm workers increased by about 200 000 from 2011 to 2018 nationally, there is a trend towards permanent job shedding due to investments in mechanisation and a demand for seasonal or contract labour.

This is the context in which the contribution of herding to sustainable agriculture needs to be evaluated. Here it is worth noting that Atkinson argues that farm labourers make up the “most neglected, marginalised, and disempowered social category in South Africa” (2007:10). She also concludes that, through the harnessing of agricultural knowledge of crops and animal husbandry among farm workers, as well as their upskilling, including as herders, the sector offers extraordinary opportunities for improving livelihoods (Atkinson, 2007:9).

Lastly, conceptualising economic viability at the local, enterprise level is a challenge. Holden *et al.* (2017) are working at the global or planetary level of sustainable development in their critique of the Sustainable Development Goals (United Nations, 2015) and not at the enterprise level of the farming sector in the Karoo. Holden *et al.* (2017) are not prescriptive around the economic model adopted, but their model for sustainable development means that meeting the livelihood needs of the enterprise cannot be at the expense of a deep engagement with ecological sustainability and social justice. Thus farmers’ own livelihoods should not be at the

expense of their employees, and if commercial farming is to be fully sustainable, these considerations have to be factored into my understanding of economic viability.

1.4. Research methodology

To gather data for this project, I adopted a qualitative research methodology as is best suited to answering my research questions. This involved, firstly, embarking on an extensive literature review on herding and the debates related to it, and, secondly, conducting a combination of semi-structured telephonic interviews and email conversations with both experts on biodiversity, herding, and predation management in the Karoo, and several farmers from the region.

1.4.1. Literature review

My extensive literature review was aimed at partially answering my research questions by exploring the key debates on herding on commercial farms. In my literature search, I used keywords such as “herding”, “herders”, “farm workers”, “Karoo farms”, “farmer-jackal conflict”, “biodiversity conservation” and “rangeland degradation”, including various combinations of phrases and keywords. I also consulted a range of online websites devoted to commercial farming and predation management, including those of the *Farmers Weekly* magazines and advocacy organisations such as the Landmark Foundation. In addition, I familiarised myself with legislation and policies that impact on farmers and herding, such as the Animals Protection Act 71 of 1962 (Union of South Africa, 1962), the Extension of Security of Tenure Act 62 of 1997 (Republic of South Africa, 1997), the Biodiversity Act 10 of 2004 (Republic of South Africa, 2004), and the Fencing Act 17 of 1912 (Union of South Africa, 1912).

1.4.2. Interviews

While the literature review and the documentary and policy analysis have been the most substantive component of my data collection, they have been supplemented by nine interviews with informants. All informants were purposefully selected; here I was fortunate to be able to draw on the research network of the SARChI Chair (where my project is located) in identifying potential contacts. All my interviews were conducted on the basis of informed consent (seven

of the nine informants gave their explicit consent to be named in their professional capacity, while two informants' identities have been protected through the use of pseudonyms). Six of the nine are experts in the agricultural and ecological sciences (Timothy O'Connor, David Peters*², Igshaan Samuels, Justin Du Toit, Heidi-Jayne Hawkins, and Bonnie Schumann). Three informants are farmers with valuable livestock management knowledge and experience (Maeder Osler, Niël Viljoen, and Andrew De Beer*).

The telephone interviews lasted between 30 minutes and 1 hour. All interviews were conducted in English. Some interviews were tailored to suit the expertise of the informant, but a similar structure guided all of my interviews (See Appendix C for my interview guide).

1.4.3. Data analysis

I used thematic analysis to analyse my raw data. Telephone interviews were transcribed verbatim on Microsoft Word to ensure that I was familiar with all of the data and that it was captured in a text file. This made it easier to code the data and search for key words. Email interviews were copied to Microsoft Word documents and the data from all interviews were then colour-coded according to themes that had emerged from the literature. Key themes that were generated from the interviews in this way were rangeland management, climate change, predation, economic cost, social dynamics, and security. The existence of very different perceptions of herding among my informants also became clear.

1.4.4. Research ethics

This study has been guided by the International Sociological Association's Code of Ethics (2001) as well as the Research Policy Guidelines of the University of Stellenbosch (2013). After submission to the Departmental Ethics Screening Committee (DESC) for review, my study was confirmed as low risk by the Research Ethics Committee (REC): Social, Behavioural and Education Research of the University on 14 October 2020 (Appendix D), given that the issues explored are not of a personally sensitive nature and much of my primary data comes from published sources or material in the public domain. In terms of research integrity, my

² The two names marked with asterisks indicate the use of a pseudonym to protect the informants' identities.

main ethical concern has been to ensure that I have done justice to the arguments that are relevant to my project.

The online and telephone interviews were conducted in line with the Research Policy Guidelines of the University of Stellenbosch (2013). I tried to ensure that written, informed consent was given prior to the interviews³, but where this was not possible, I relied on oral consent before proceeding with the interview (International Sociological Association, 2001). The recording of the telephone interviews was subject to each participant's explicit consent and my transcripts of the telephone interviews were reviewed by each participant before they were asked if they agree to being named in this report or not. As already noted, most informants were happy to be named in their professional capacity; those who did not explicitly agree have been given pseudonyms to protect their identity.

1.4.5. Limitations

There are two main limitations in this project. The first relates to the COVID-19 restrictions on travel and face-to-face research, which forced me to move my inquiry into the online and virtual space. While this has presented me with the opportunity to reach a more diverse group than I would have if I had based myself in one area in the Karoo, it necessarily excluded those who have no or limited access to the internet, or where online communication would be likely to impair the quality of the interaction. Unfortunately, this has meant that I have not been able to talk to herders themselves, which I consider a major limitation of my study.

The second limitation concerns the time and space afforded to an Honours research project. To do the topic justice and delve fully into all the critical debates on herding and the dynamics of commercial farming in the Karoo requires a much more extensive project than I have been able to conduct. In addition to not being able to reach herders, my engagement with farmers has been limited. The majority of my informants are conservationists and academics, and my study thus disproportionately favours their voices over those of farmers. I acknowledge that in order to understand farmers' views of herding fully, a project that focuses more directly on their perspectives is also required. The perspectives of both herders and farmers are critical for understanding whether and how herding can contribute to sustainable agriculture in the Karoo.

³ See Appendix B for consent form

Chapter 2: Herding and sustainable agriculture: key debates

In this chapter, I review the debates on herding and its potential contribution to sustainable agriculture as defined in Chapter 1. First, by way of background, I briefly sketch the history of herding and discuss studies of herding on the communal areas of Namaqualand, where the practice is today most alive. Thereafter, I discuss my research findings, organised in terms of the three dimensions of sustainable agriculture in the Karoo presented in the previous chapter: biodiversity conservation, responsible human-wildlife conflict management, and social justice.

2.1. Background on small livestock farming and herding in the Karoo

2.1.1. History of commercial sheep farming

The KhoeKhoen were the first farmers of the Karoo, a group of pastoralists who arrived in the Namaqualand region approximately 2 000 years ago with their fat-tailed sheep (Walker *et al.*, 2018:161). Herding societies were small and mobile, moving their herds in search of water points and appropriate rangeland for sheep grazing. To protect their sheep from predation, the pastoralists made *kraals*, stone-built enclosures into which they herded their sheep at night (Walker *et al.*, 2018:161). However, following colonial conquest from the seventeenth century, a great shift in small livestock farming occurred. By the second half of the nineteenth century, pastoralism was largely replaced by the introduction of settled farming on privately owned portions of land, where the owner was permitted to “exploit the natural resources ... as they wished” (Salomon, Cupido & Samuels, 2013:71).

KhoeKhoen pastoralists and indigenous |Xam hunter-gatherers who survived the onslaught had been driven onto white-owned farms as marginalised workers and servants, bringing with them their indigenous knowledge of “predators, plants, water, disease, insects, veld, drought, and climate” (Beinart, 2018:192). A small number kept a degree of autonomy on mission stations and small land grants scattered across the Northern Cape. Walker *et al.* (2018:164) explain that the consolidation of white supremacy was enhanced by the deep-drilling technologies developed by the early 1900s, which made farmers less dependent on the presence of surface water when choosing a place to settle. Windmills pumped ground water for the livestock, so the options for the settlers expanded radically, and more rangeland was subject to appropriation

(Archer, 2000:675). Additionally, Archer (2000:686) argues that the government-subsidised erection of wire fencing was important from the late nineteenth century. The Fencing Act 17 of 1912 (Union of South Africa, 1912) enforced jackal-proof fencing and subsidised the costs of fencing incurred by farmers (Salomon *et al.*, 2013:72). The enactment of the Fencing Act of 1912 was welcomed by *trekboere*⁴ and conservationists alike, the latter increasingly concerned about the impact of *kraaling* on the vegetation.

Woolled sheep were a valuable commodity for commercial farmers for over a century (Beinart, 2018), but conservationists became increasingly concerned that the production of this commodity came at a cost for the environment of the Karoo. In the 1960s, when the carrying capacity of the land was better understood, a stock reduction scheme saw farmers getting compensation for reducing sheep numbers (Beinart, 2018:198).

Today, privately owned commercial farms cover over 80% of the Northern Cape Province, taking up some 30 million hectares of land (Walker *et al.*, 2018:167). The number of farming units is decreasing and the farms becoming larger, with Beinart reporting that the average farm size “increased from about 5 600 to 9 000 ha between 1993 and 2015” (2018:199). As mentioned before, relationships between landowners and farm workers are complex. While the movement of farm workers off farms predates post-apartheid land reform, the introduction of the Extension of Security of Tenure Act 62 of 1997 (Republic of South Africa, 1997), an act intended to improve the employment and living conditions of farm workers, was followed by widespread shedding of permanent workers as farmers did not want to be beholden by the Act (Peters, telephone interview, 12 October 2020).

Changes in land use on privately owned farmlands are accelerating, with a shift from livestock to game farming being one major change (Manyani, 2020). Manyani argues that this shift is mostly economically motivated, although “concerns around farmer security and an uncertain land reform policy context are certainly factors in the decisions [farmers] are making related to their farming strategies” (2020:217).

In recent years, there has also been a growing advocacy for hands-on herding on commercial farms, including support by some farmers who are conscious of the importance of sustainable wildlife management and the conservation of biodiversity. Major advocates of herding on commercial sheep farms in the Karoo are the Landmark Foundation outside Beaufort West and

⁴ ‘Trekboere’ was the name given to the early nomadic colonialists before they became settled with the introduction of certain technologies.

the Herding Academy in Graaff-Reinet, run by the South African College for Tourism with the goal of teaching local youth about livestock management to improve the conditions of the veld and elevate the role of the herder in the Karoo.

2.1.2. Lessons from the communal rangelands

A small but important body of research documents the continued use of traditional and hybrid herding practices on the former ‘coloured reserves’ of the Northern Cape (Samuels, Allsopp & Knight, 2007; Allsopp, Laurent, Debeaudoin & Samuels, 2007). Current residents use a combination of the traditional herding of their ancestors and contemporary hybrid herding systems. Samuels *et al.* (2007:730) and Allsopp *et al.* (2007:741) describe the role of the herders in the Leliefontein communal rangeland in Namaqualand. In the early 2000s, this communal area of 192 000 hectares was grazed by approximately 225 herds of sheep and goats, making use of some 600 stock posts and 169 water points (Salomon *et al.*, 2013:72).

Allsopp *et al.* (2007) argue that there is a commonly held misperception that communal herders are not technically skilled and do not consider the long-term effects of their livestock management on the land, resulting in environmental destruction of the area. In reality, according to Allsopp *et al.* (2007:745), there are valuable lessons to be learnt from the herders, including their respect for collective norms and sharing of resources, as well as their efforts to ensure long-term sustainability of the land by using methods guided by both traditional and technical knowledge. Contrary to fears of lawlessness, selfishness, and a lack of norms among herders, they found that their herding practices were guided by various regulations and constraints. Firstly, herders were not allowed to lead herds to cropping areas during growing season. Secondly, water points across the 192 000 hectares of land are shared; although some are owned and payment is then required, typically in the form of one sheep or goat, ownership does not imply exclusive access (Allsopp *et al.*, 2007:746). Grazing patterns were guided by the herder’s knowledge that “animal intake is dependent on season and amount of rainfall” and that “grazing strategies must consider water availability [and the] presence of croplands and other herds” (Allsopp *et al.*, 2007:747).

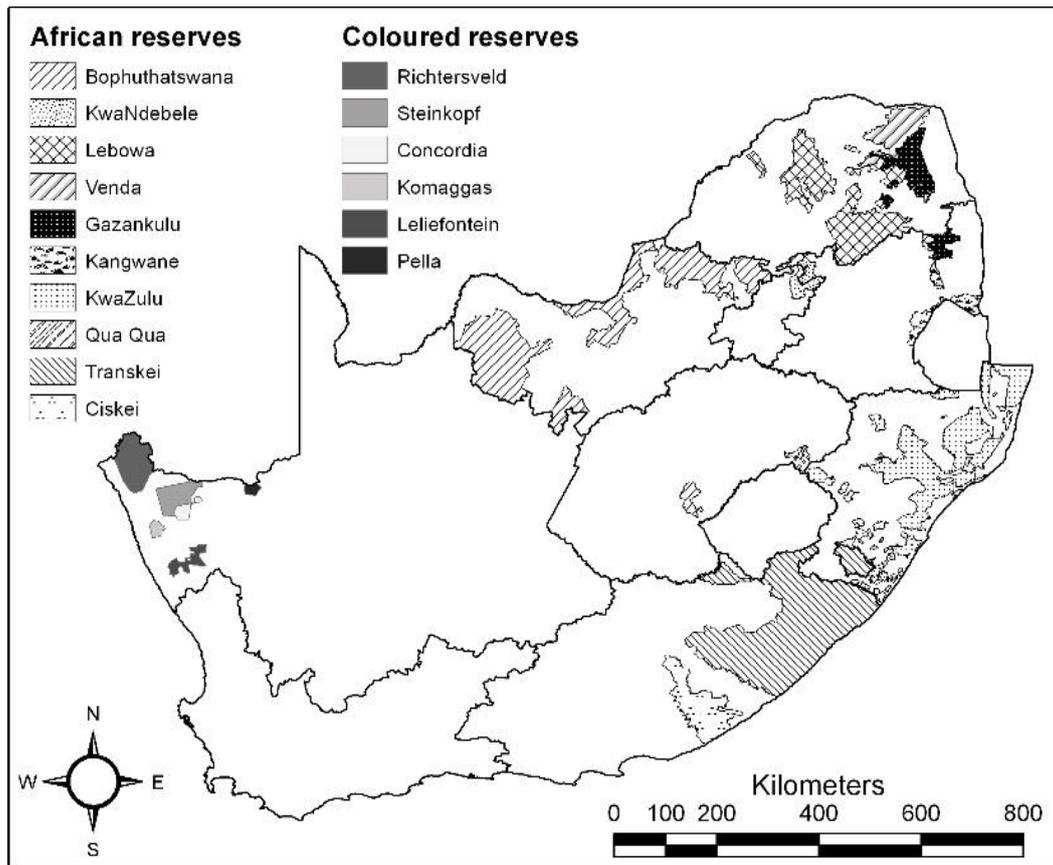


Figure 2: Map showing African and 'coloured' reserves established in South Africa (Source: Hoffman, 2015)

While the strategies varied from herder to herder, most herders guided their herds at the start of each day so that the same route was not taken too often, to avoid the trampling of vegetation and soil disturbance (Allsopp *et al.*, 2007:747). Herders also managed seasonal and daily herding patterns so as to avoid toxic species and preserve certain areas for wetter seasons only, allowing for the seasonal rest of each area and giving it time to recover for the next season's grazing. In order to sustain their livelihoods successfully, herders in Namaqualand need to have sound agroecological knowledge of the rangeland (Salomon *et al.*, 2013:72).

2.2. Herding on commercial farms and biodiversity conservation

Following the discussion of biodiversity conservation in Chapter 1, this section relates herding to the debates around rangeland management and degradation. This section reflects on my

findings on how herding can facilitate a more productive use of space in an arid to semi-arid zone going into a changing and increasingly unpredictable climate.

2.2.1. Rangeland management and climate change

Hoffman *et al.*'s (2018: 220) analysis of land use changes in the Karoo provides evidence of a significant recovery in Karoo vegetation in the course of the twentieth century. Beinart (2018) similarly argues that the implementation of conservationists' ideas in the second half of the twentieth century, together with lower levels of stocking, led to the environmental recovery of the land. This illustrates that managing the movement of livestock can lead to substantial improvements in the rangeland as a productive agricultural zone.

For advocates of herding, its main contribution to conserving Karoo ecology is that it allows livestock to be moved around the rangeland strategically, thus avoiding both over- and selective grazing and subsequent land degradation (Salomon *et al.*, 2013:74, Samuels, Allsopp & Hoffman, 2013:87). According to O'Connor, one of my expert informants, area-selective grazing is the "basis for degradation in a lot of systems" (telephone interview, 13 October 2020). Given that palatable plants are not evenly distributed across the landscape, (Peters, telephone interview, 12 October 2020), selective grazing results in the most palatable plants being removed from the system first, and if grazing is not managed, "those [plants] with fewer nutritional qualities persist and eventually take over" (Samuels, telephone interview, 15 October 2020). For this reason, provided the herder has in-depth knowledge about the characteristics of the area, O'Connor argues that herding could be a valuable tool to mitigate against area-selective grazing (telephone interview, 13 October 2020). Furthermore, there are parts of the rangeland where livestock grazing can stimulate growth and diversity of the vegetation, which can also be encouraged by herders (Salomon *et al.*, 2013:73).

Du Toit (correspondence, 2020) notes that in dry areas such as the Karoo, short periods of grazing followed by long periods of rest is an advantageous approach, so if herds are not too dense, herding could be useful in implementing this. Schumann (correspondence, 2020) agrees, stating that periodic intensification of grazing can be beneficial for the veld. However, she also notes that this would be difficult to achieve on smaller properties. Schumann was not the only participant who raised the question of spatial scale or to argue that herding requires the ability to move livestock across large areas if it is to be an effective tool of rangeland management in the Karoo. For O'Connor, the true benefit of herding in commercial agriculture will only be

realized if commercial farmers start operating at a larger scale (telephone interview, 13 October 2020). This would entail farmers coming together and pooling their resources, effectively “[operating] as a large company” (O’Connor, telephone interview, 13 October 2020). He explained why the mobility of herds is vital thus:

There exist key habitats that make a disproportionate contribution to supporting stock through difficult periods. It therefore follows that the larger an area available to stock might be, then the greater the likelihood that it will contain appropriate habitats or resources for carrying stock through bottleneck periods, and of stock physically being able to access such habitats (O’Connor, telephone interview, 13 October 2020).

Thus, O’Connor argues, while there is value in herding at the larger scale, on the average-sized commercial farm the positive benefits of herding would be no greater than those from practices already in place, such as fencing and rotational grazing (telephone interview, 13 October 2020).

Peters also recognized the importance of cooperative arrangements between farmers going forward in a changing climate, particularly in an arid landscape such as the Karoo (telephone interview, 12 October 2020). He explained the importance of understanding the relationship between rainfall allowance and rainfall variability in arid zones: that the “less rain you get, the more variable it is” (telephone interview, 12 October 2020). It follows that sustainable veld management requires being able to move herds to the locations where it has rained. The problem, however, is that farmers operate on relatively small parcels of land; it would, therefore, be useful to consider a cooperative arrangement of herd amalgamation, which would enable farmers to emulate the extensive transhumance patterns of the precolonial herders (Peters, telephone interview, 12 October 2020).

Samuels agrees that herding becomes increasingly beneficial as space increases but, unlike Schumann and O’Connor, he also sees a place for herding on current commercial farms in the Karoo (telephone interview, 15 October 2020). This is because the herder encourages a more equal distribution of grazing pressure on the farm, while their hands-on approach allows for “small interventions that protect the system” (Samuels, telephone interview, 15 October 2020).

Two of the practicing farmers I interviewed also saw the benefits for biodiversity from herding. De Beer spoke about three ecosystem cycles that herding has facilitated on his farm: “the energy cycle, the nutrient cycle, and the water cycle”; together with biodiversity, these are “the four important ecosystem processes” (telephone interview, 14 October 2020). He explained how this impacts production thus:

I want to convert, in essence, radiant energy through the energy cycles, the nutrient cycles, and the water cycles, into a range of products that I, in turn, convert into cash through the farming produce. We use some technology, but really, at the end of the day, we have the hooves and teeth of animals to help us make that conversion. But how do you direct that? And that brings us to herders. That's the only way we can actually direct our management to foster those four ecosystem processes. So, the herder becomes a very important tool to support our paradigm of seeing ecologically sustainable farming (De Beer, telephone interview, 14 October 2020).

Osler, a sheep and cattle farmer with 43 years of experience in the eastern Karoo, agrees that herding can facilitate the productive use of land, and describes herding and biodiversity as involving “old synergies” (correspondence, 2020). For him, the advantage of herding lies in its “regular and closer monitoring of livestock... which enables a closer track on both veld and animals, including condition assessments of both”. However, rather than advocating a pure herding approach, he maintains that herding models which integrate herding with other well-established grazing management systems such as the use of permanent or temporary electric fences are more appropriate in the Karoo (Osler, correspondence, 2020).

Overall, while some of my informants were more convinced of the benefit of herding than others, there was a general consensus that herding can make a valuable contribution to responsible rangeland management, provided that herders have good insight into the characteristics of the area.

2.3. Herding and human-wildlife conflict

This section discusses the significance of herding in the debates around responsible livestock management and finding solutions to farmer-jackal conflict in the Karoo.

2.3.1. Farmer-jackal conflict

For herding advocates such as the Landmark Foundation, a primary motivation for adopting herding is that the presence of a herder acts as a natural deterrent for predators. Herding thus negates the need for lethal trapping and hunting of animals such as jackals and caracals (Salomon *et al.*, 2013:74). The concern to protect wildlife is not only a driving consideration

behind many herding initiatives, but also a motivation for my undertaking this project. Underlying this project is a desire to conserve the jackal, caracal, Cape leopard, and other wildlife affected by harmful predator controls in the Karoo, while acknowledging that farmers' livelihoods depend on the survival of livestock.

The hunting of jackals in the Karoo is a lucrative industry, with professional vermin hunters making between R600 and R700 per head of jackal (Terblanche, 2020:178). A popular argument against hunting is that jackals are territorial creatures, and when they are hunted, they recolonise vacant territories (Natrass & Conradie, 2015:12). However, it is also true that the more jackals there are in an area, the smaller their territories become and thus the easier it may become to control them (Natrass & Conradie, 2015:12). A 2020 story in the *Farmers Weekly* illustrates the lengths that farmers are prepared to go to protect their livestock and their livelihoods through lethal methods of control. In this account, a Karoo farmer was praised for his innovative use of a poison collar in conjunction with a nail collar to outwit livestock predators on his farms near Beaufort West and Hopefield (Van der Walt, 2020). The purpose of the nail collar is to injure the attacking predator's jaw so that it is unable to bite lambs again. However, if the predation persisted, the farmer placed poison-filled pouches on the collars of some of his livestock which were likely targets for the predators.

While the poison killed both the predator and the sheep, the farmer regarded it as a win as he had eliminated a predator in the process (Van der Walt, 2020). He also claimed that non-lethal methods such as livestock collars equipped with bells, scent blockers and yellow reflectors were not enough to deter predators, forcing him to turn to harmful and sometimes lethal methods of control in order to bring the population of relentless predators down. The author of the report concluded by arguing that predators are adaptable and, when "constantly exposed to a control measure, such as wires, traps and collars, they adjust their behaviour so that these controls have little or no success in controlling them" (Van der Walt, 2020).

Natrass and Conradie (2015:1) have demonstrated that while environmentalists are outraged at the thought of lethal trapping of predators, farmers are equally outraged by being told how to manage their land and their livelihoods. Their 2015 article on "Jackal Narratives" gives a voice to both sides of the argument and calls out organisations such as the Landmark Foundation that vilify the land and livestock management practices prevalent on Karoo farms (2015:8). The farmers that Natrass and Conradie (2015:9) refer to argue that hunting or trapping predators protects their sheep from the cruelty of predator attacks, which often leave

livestock alive but suffering, with missing limbs, eyes and tongues. Conversely, the Landmark Foundation argue that gin traps, snares, poison, and other common means of predator control on farms are inhumane, causing unnecessary and equally disturbing harm to defenceless wildlife (Smuts, n.d.:9). Even if a landowner obtains a permit, as per the Biodiversity Act 10 of 2004 (Republic of South Africa, 2004), there is no guarantee that unintended targets do not get caught in the crossfire.

The available evidence shows that herding is an effective non-lethal alternative for lowering livestock losses. Hawkins (correspondence, 2020) reported that findings from a study on Karoo farms showed that losses due to predation were down to 1% on farms where herding was implemented as opposed to 6% on farms where it was not implemented. Similarly, Samuels argues that communal farmers practicing herding lose on average only 4% of their stock to predation, compared to commercial farmers who use jackal-proof fencing as their main method of predator control and can “lose up to 25% of their animals through predation” (telephone interview, 15 October 2020). Du Toit and Schumann agree that increased human presence on farms is key for reducing not only predation but also stock theft, a growing problem for farmers in the Karoo (correspondence, 2020).

De Beer attributes the success of herding on his farm to the fact that “predation is about vulnerability and availability” (telephone interview, 14 October 2020). With herding, there is a human presence throughout the day and night, and livestock is therefore not vulnerable to predators. On his farm, the loss of new-born lambs has been cut to 3% and human-wildlife conflict is no longer a concern (telephone interview, 14 October 2020). De Beer’s successful herding project is grounded in the understanding that carnivores are integral to the ecosystem of the Karoo, and that rather than eliminating the predators, farmers must manage their own practices so as to live with them (telephone interview, 14 October 2020). Farmers have a responsibility to manage their practices and livestock, not the predators, which requires a paradigm shift away from the notion of “predator control” (telephone interview, 14 October 2020).

Overall, my findings suggest that the practice of herding can make an important contribution to conserving both the wildlife that plays a critical role in the Karoo ecosystem, and the livestock on which farmers’ and farm workers’ livelihoods depend. However, given the evidence for herding as a deterrent against predation, the reluctance of commercial farmers to adopt herding warrants attention. Natrass and Conradie (2015:8) argue that if non-lethal

methods worked as well as advocates claim, then farmers would have adopted them ages ago, as methods of hunting and trapping are “expensive, cruel, [and] labour intensive”. Niël Viljoen, one of the farmers with whom I communicated, who is known as a predator and livestock management expert, was adamant that herding is not a viable option for controlling livestock depredation on commercial farms and that a more effective approach is the “isolation of livestock by means of jackal proof and electrical fencing” (2020). Unfortunately, this study was not able to delve into this perception fully; it is likely, however, that it cannot be separated from concerns around security and social responsibility, which are discussed in the next section.

Alternative non-lethal approaches, besides herding, that were brought up in the interviews and email correspondence included the introduction of Anatolian dogs (O’Connor, telephone interview, 13 October 2020), rotational grazing with intensification of production over the lambing period (Schumann, correspondence, 2020), flashing lights (Hawkins, correspondence, 2020), and ‘adaptive’ herding models (Osler, correspondence, 2020). However, I was unable to go into the merits of all these practices in the available time.

2.4. Herding and social justice

This section explores the potential contribution of herding to the promotion of social justice, which includes meeting human needs in a sustainable and equitable way in the Karoo. It begins with a discussion of the skills set involved in herding and perceptions around this role. The section then moves to a discussion of the comparative costs of herding and existing methods of livestock management involving fencing. Lastly, this section addresses social dynamics between farmers and farm workers on commercial farms, including tensions related to land reform and farmers’ security concerns.

2.4.1. “Not all herders are equally skilled”⁵: Elevating the herder from unskilled to professional

Salomon *et al.* (2013:73) describe a good herder as someone who ensures livestock well-being by protecting the animals from predators and preventing them from grazing on poisonous

⁵ Peters, telephone interview, 12 October 2020

plants; furthermore, a good herder has the knowledge to assist stock during birth, identify when an animal is sick, and ensure that the herd is comfortable at all times. Because of the range of skills required, Samuels maintains that herding is in fact a highly skilled profession and there is a complete misunderstanding among farmers of what herding involves (telephone interview, 15 October 2020). While his research has focused on herders in the communal farming areas, he understands that for herding to operate successfully on commercial farms, herders require a similar extensive skills set.

In addition to the skills already listed in a previous section on herders of the Leliefontein communal rangeland, Samuels identifies the ability to read the landscape and vegetation condition (in order to know when to rest the veld), sound knowledge about species composition and the characteristics of soil erosion, as well as knowing where to find water throughout the year (telephone interview, 15 October 2020). In this regard many herders are able to read the weather and predict daily and seasonal rainfall patterns, a skill they have acquired by spending so much time in the veld (telephone interview, 15 October 2020). Being able to differentiate animals according to health status is also important, so that the herder can ensure that animals in poor condition are given priority access to the most palatable plants (Samuels, telephone interview, 15 October 2020). While arguably all farm workers need these skills, herders need to make quick decisions on their own in the field, making it vital that they become experts in their own right. These skills furthermore warrant recognition through the payment of decent wages, as the herder is also given more responsibility and is often expected to work unsociable hours.

2.4.2. Perceptions of the role of the herder

Salomon *et al.* (2013:73) argue that one of the social advantages of promoting herding on commercial farms is its potential to create long-term skilled employment opportunities for local residents who are seeking work in the agricultural sector (Salomon *et al.*, 2013:73). They argue further that the practice of herding can give herders a strengthened sense of identity and belonging in the farming community, given that farm workers belong to a traditionally livestock-centred culture in which herding has deep roots.

A number of my informants, however, argued that the conditions of the Karoo make herding an unattractive role, especially for the youth. Schumann, for instance, stated that it is unlikely that young local residents will “want to spend every day in the brutal sun or extremely cold

winters walking outdoors every day” (correspondence, 2020). She believes that if young people have access to education, they will opt for alternative career options. Viljoen (correspondence, 2020) agrees, arguing that young men and women have more ambitious aspirations, and herding offers little opportunity for personal advancement. He also referred to the challenge of being exposed to the natural elements of the Karoo, which include sub-zero temperatures with wind, hail, and rainstorms in winter, and scorchingly hot temperatures in summer. Similarly, Du Toit argued that not many people have the “psychological makeup to dedicate themselves to a life of near solitude for much of the time” and that in order to make it attractive to a wider range of young people, the issue of loneliness would have to be addressed (correspondence, 2020). Furthermore, for generations the status of herder has ranked low on the social scale on Karoo farms, as it has often been considered work for a young boy (Du Toit, correspondence, 2020).

For Samuels, who has extensive fieldwork experience with herders, one way to address the issue of loneliness is to provide herders with decent lighting and to ensure cell phone connectivity (telephone interview, 15 October 2020). If this were provided, herding would be considered a more attractive occupation. At the same time, he noted that in the communal areas, herders are generally men in their mid-fifties and often retired (telephone interview, 15 October 2020). The only young herders that he knows are family members and he acknowledges that there is not much incentive for young men and women to become herders.

To change the perception that herding is not an occupation for young people, both Samuels and Hawkins argue that herding needs to be promoted as a highly skilled job option in the Karoo. The Herding Academy in the Eastern Cape is making strides in this regard, providing students with an accredited course where, according to the Academy’s website, “the ancient skill of herding animals are being applied within a holistic decision-making framework to regenerate the landscape and bridge the socio-economic and cultural barriers that existed between humans and wildlife through-out Southern Africa”. This is an important step towards the professionalisation of the practice and follows the trend of herding academies in Spain and France, which position herding as neither an outdated nor a backward-looking practice (Samuels, telephone interview, 15 October 2020). Hawkins (correspondence, 2020) also reported that two out of the ten herders in her study who graduated from the Herding Academy were women. This may be indicative of a shift towards a more inclusive image of herding.

The abovementioned increase in herders' wages could act as an incentive for more young people to consider herding as a career option. However, as argued by Atkinson (2007), farm workers are often poorly paid and overworked, and the extent to which a marginal wage increase would make a difference to the lives of farm workers is questionable. There is potential for future research to study how herders' wages compare to farm workers' wages, and to investigate what kind of opportunities, if any, this increase might provide for herders, their families, and futures.

While De Beer is reluctant to speak on behalf of the herders on his farm, he notes that there has never been a problem filling a herder position on his farm (telephone interview, 14 October 2020). On the contrary, they "have been inundated with people requesting work" (De Beer, telephone interview, 14 October 2020). Furthermore, since the start of his herder project, only two herders have left, and both were quickly replaced (De Beer, telephone interview, 14 October 2020). He believes that while the increased salary they offered herders provided the initial incentive, there is also a shared sense of pride among herders in what they have achieved (De Beer, telephone interview, 14 October 2020). Herders on this farm are trained in herd health, low-stress animal handling, and optimising animals for the market. They have introduced a training program on animal production, animal well-being, and ecological systems management (De Beer, telephone interview, 14 October 2020). This training program has allowed the herders to redevelop lost skills. Of course, as De Beer acknowledges, these perceptions of the social advantages of herding can only be verified by the herders themselves.

2.4.3. The relative costs of herding and fencing

My literature review reveals that the ecological benefits of herding have been more extensively researched than the economic costs and benefits. Reasons for this may include the difficulties of comparing the cost of herding with that of fencing and trapping. However, the study by Salomon *et al.* (2013:73) compared the costs of fencing with the projected costs for a full-time herder in one of their case study areas on the outskirts of Lesotho. Setting aside the cost of the future maintenance of the fencing and the labour costs of erecting the fences, they calculated the cost of just the 25km of fencing material to be R140 000, some 2.5 times the R54 750 it would cost to employ one full-time herder for a year in 2013 (Salomon *et al.*, 2013:73). While this case study is dated and limited, it offers a useful starting point for considering the economic viability of herding.

Samuels believes that the production gains from lowered stock losses with herders would easily offset the higher wages paid to them (telephone interview, 15 October 2020). De Beer agrees with Samuels that the “production offsets should more than make up for the incremental human resources cost in implementing human herders” (telephone interview, 14 October 2020). On his farm, farm workers have been offered a 60% salary increase if they were willing to become herders, an offer which most farm workers have taken up. Further evidence that herding can be cost-effective comes from a cost analysis by Hawkins, “where [they] calculated that the cost of hiring herders [with] guardian dogs was the same as the cost of lethal livestock protection methods” (correspondence, 2020). The lethal methods involved hiring a hunter, laying gin traps or cages, driving to check the traps daily, and shooting captured animals.

Commercial farmers would, however, consider other factors before switching to herding. For instance, a number of informants noted that the capital investment by farmers or their predecessors in fencing would act as a potential economic barrier to switching to herding, especially on farms where the fences are in decent condition and the existing grazing system is deemed sufficient for production purposes. As Peters argues, “farmers and the state have invested heavily in fencing and water point infrastructure” (telephone interview, 12 October 2020), with fencing “one of the biggest capital outlays for a grazing property” (O’Connor, telephone interview, 13 October 2020). However, as Du Toit points out, fences need to be repaired continually, and the presence of a herder could mean that fences require less maintenance, which could balance out the cost of paying a herder. Perhaps when it is time to replace or repair fences, herding could be considered an attractive option by farmers.

2.4.4. Farmers’ security concerns

Perhaps more significant in farmer calculations than fixed costs are more existential concerns around security. Implementing herding on farms entails introducing more farm workers onto the property and my conversations with informants indicated that this is a major barrier to herding. Hawkins, whose study involved the introduction of herding on a number of farms in the Karoo, reported that some farmers who were not in favour of the practice expressed concern that “herders brought a social responsibility and even problems onto the farm” (correspondence, 2020). Moreover, farmers who favoured the practice reported that the herders employed by the study, who had been trained and been through a screening process, “were different from the normal herder, who was taking [the] job out of necessity” (Hawkins,

correspondence, 2020). Schumann echoed similar concerns by farmers about the unreliability of farm workers (correspondence, 2020).

Other barriers that were repeatedly raised throughout my study concerned wage disputes and farmers fears around land reform policies aimed at ensuring secure tenure frights for farm workers on the farms on which they reside. Viljoen (correspondence, 2020) reported that one reason why herding is not viable is because of the annual increase in wages, with Peters arguing that wage disputes result in problems for farmer-worker relations (telephone interview, 12 October 2020). As pointed out by Samuels, even if farmers are going through a difficult time, they are still required to pay their workers, which is a disincentive for increasing their labour force by recruiting better paid herders (telephone interview, 15 October 2020). Schumann (correspondence, 2020) illustrates the extent to which farmers are still reluctant to hire workers, referring to a farmer with a 10 000-hectare property who only employs two workers to assist him on the farm. Often farmers expect highly skilled people to work with them, but offer miserly wages in return (Peters, telephone interview, 12 October 2020). Conversely, sometimes farmers trust herders with their livestock, but the herders are not adequately trained, resulting production losses for the farmer (Schumann, correspondence, 2020).

Tenure security is another issue impacting on farmers decisions around their labour requirements. The Extension of Security of Tenure Act of 1997 was intended to facilitate “long-term security of land tenure” among various groups with insecure tenure, including farm workers, and regulating “the conditions and circumstances under which persons, whose right of residence has been terminated, may be evicted from land” (Republic of South Africa, 1997). While the Act aimed to protect farm workers from being unjustly fired and subsequently ordered to remove themselves and their families from their residences on the farm, Peters noted that this left farmers fearing that they would have “no control over what happens on their property”, which in turn led to an upsurge in pre-emptive evictions of farm workers from farms and an increase in unemployment among farm workers after the Act came into effect (telephone interview, 12 October 2020). Samuels also saw farmers’ concerns around farmworker claims to security of tenure as a barrier, which he also linked to quicker turnover rates in farm sales compared to earlier decades:

[Some] farmers don't farm for a lifetime anymore. After a few years, they want to sell [and] other players come in. The system rotates at a much quicker level than in the past. So, when you sell your land, I think that's sometimes an impediment, because

what do you do with the farm workers who have rights now? The [buyers] might have other ideas for the farms, but then there are people on the farms that they have to consider (Samuels, telephone interview, 15 October 2020).

Viljoen raises another reason why farmers are reluctant to increase their work force at this stage. He argues that farmers' assessments of an unstable political situation in South Africa and their concerns about the phenomenon known as 'farm murders' are of paramount importance (correspondence, 2020). This extends to fears that herders could become a threat to farm security because "the underground operations of well-organised syndicates are too effective in overwhelming herders to participate in unlawful operations" (Viljoen, correspondence, 2020). O'Connor confirms that these are real concerns for farmer: the more people allowed to be on farms, the more potential problems farmers face in the future (telephone interview, 13 October 2020). He suggests that farmers' apprehensions around herding have less to do with assessments of its potential benefits in managing their land and livestock and more to do with security concerns: for farmers, the issue of security is of such paramount importance that it may discount any benefits herding may have (O'Connor, telephone interview, 13 October 2020).

De Beer, on the other hand, argues that these apprehensions are indicative of the racial prejudice that needs to be challenged in the Karoo (telephone interview, 14 October 2020). He notes that they have not experienced these issues on his farm where full-time herding has been practised for over four years. This shows that if staff are treated with respect and offered opportunities through the elevated role of becoming a qualified herder, then there is an opportunity for broader rural regeneration, all while retaining invaluable traditional herding skills (telephone interview, 14 October 2020). Samuels shares this appreciation for the tradition of herding and also called for the elevation of the status of the herder (telephone interview, 15 October 2020).

Chapter 3: Discussion and Conclusion

The aim of this research project has been to explore the debates around herding in order to understand its potential contribution to a more sustainable commercial farming sector in the Karoo. This research report should be read as a pilot project for a future, larger study on the social dynamics of farmer-worker relations and the perceptions of the role from herders and farm workers.

In this concluding chapter, I first reflect on my research findings, using my original research questions to structure the discussion. In answering my third research question, I reflect on the challenges of conducting research during the COVID-19 pandemic and how this has affected my ability to achieve the objectives of my research project. Finally, in conclusion, I discuss the complexity of assessing herding's contribution to sustainable agriculture in the context of the Karoo.

3.1. Reflections on the findings

3.1.1. Key debates

My first research question focused on the key debates around herding as a method of livestock management on commercial farms, including concerns around the history of herding, rangeland management, farmer-jackal conflict, economic viability, and the social function of herding. It is clear that herding has been integral to the history of farming in the Karoo. Not only were the earliest sheep farmers the nomadic KhoeKhoe pastoralists, but nomadic pastoralism dominated much of the colonial period until the introduction of deep drilling and fencing technologies. Furthermore, in the former 'coloured reserves' in Namaqualand, herding is still practiced on a small scale. As argued by Samuels *et al.* (2007) and Allsopp *et al.* (2007), commercial farmers can learn from Namaqualand herders' respect for collective norms, sharing, and their efforts to ensure long-term sustainability of the land by using methods guided by both traditional and technical knowledge.

With regards to rangeland management, my interviews with ecologists and conservationists showed how herding could fit into the already established rangeland management practices and land-use planning that can be found in the literature. Two of the ecologists that I interviewed

offered a vision of a cooperative arrangements between two or more commercial farms/ farmers that would create the opportunity for this, through the amalgamation of herds and the sharing of resources, preferably with the option of moving livestock between the winter-rainfall and summer-rainfall regions of the Karoo. Here, herding would fit into this vision, as large herds would be mobilized along vast spaces of land, and the early transhumance cycles of the precolonial herders would be emulated on the commercial scale.

Of course, this vision is just that – a vision – and the pragmatic challenges around getting farmers to pool their resources could be a barrier, particularly in a context where a tight control of productive operations appears as characteristic of the commercial farmers in the Karoo. Nevertheless, large-scale farming is not the only context in which herding could be effectively realized. Most of my informants felt that herding could be a valuable tool for rangeland management and conservation on the scale at which commercial farmers currently operate, which is on farms between 5 000 and 10 000 hectares in most cases.

My findings showed that another major benefit of herding is its non-lethal approach to predator management. Carnivores form an integral part of the ecological makeup of the Karoo and their protection has been a topic of contestation for decades. Farmers need to protect their stock and their livelihoods, however, the hunting, trapping, and shooting of non-damage causing animals can go against various acts and lead to regional extinction of a species. As shown in Chapter 2, herding can offer a solution to this ethical dilemma, as the increase in human presence around herds deters predators and negates the need for lethal control methods. One farmer proposed introducing herding models rather than pure herding, which can entail a combination of human herding and other forms of livestock management, such as herding with permanent fencing, herding with temporary fencing, or herding with guardian dogs, flashing lights, and vuvuzelas⁶. Overall, the findings show that herding can be an effective predator control, but these perceived advantages cannot be viewed in isolation.

Next, my inquiry into herding's economic viability produced mixed responses and I realized that the issue of economic costs and benefits is extremely complex. The most valuable contribution came from one informants' cost analysis which compared the cost of paying herders with guardian dogs to the cost of lethal methods such as hiring hunters and laying traps. While I do not have access to the figures, this is a useful reference point for the cost of herding

⁶ Vuvuzelas are long, plastic horns that, if blown into, produce a loud, thundering sound that can be heard from far away.

as a predator control compared to alternative approaches. When asked about the economic viability of herding, many informants compared the cost of paying herders to the cost of repairing or replacing fences. Some were of the view that existing fencing provides a rotational grazing system that adequately maintains the integrity of the veld, and that the capital investment in fencing was too big to consider changing systems. For these informants, herding could be an option for farmers to consider when the time comes to replace or repair fences, but until then, the switch to herding for veld conservation was not justified in their view. Other informants viewed the switch to herding as economically viable, with the view that the hands-on care and security provided by human herders made the expenses associated with changing productive systems and paying increased wages warranted, as fewer livestock losses resulted in a productive gain.

My findings related to the social aspects of herding were the richest and most varied. Proponents of herding argue that it can be a way of upskilling farm workers and regenerating traditional knowledge systems. However, issues of land reform and security of tenure were found to be barriers for farm owners wanting to adopt the practice. Previously, there were larger numbers of resident farm workers on farms than there are now, but a perceived social responsibility and loss of control that comes with an increased number of farm workers has led to widespread job shedding. Additionally, the introduction of new people onto the farm was reported to bring fears of insecurity to the farms, with a few informants saying that to invite more workers onto a farm was to invite problems down the line. One farmer referred to ‘farm murders’ as making herding out of the question, with a number of others mentioning that organised stock theft might increase with the widespread implementation of herding.

Overall, the findings suggest a wariness among farmers towards outsiders, where a perceived loss of control creates uneasiness around any practice that invites more people onto their land and threatens their livelihood.

3.1.2. Reasons for the renewed interest in herding

My second research question asked about the reasons for the renewed interest in herding. Two of my informants who are deeply committed to herding (Samuels and De Beer) provided reasons for their interest in it as well as their opinions on the general renewed interest in herding in recent decades. Herding came to De Beer’s attention in 2014 after he participated in a research project that found that livestock losses were lower on farms with a significant human

presence on the rangeland than those without (telephone interview, 14 October 2020). He has built his project around the idea that returning to the old system of herding might be the best way to increase the human presence on farms (telephone interview, 14 October 2020). De Beer argues that the allure of technology has drawn people away from what he believes to be “the solution that was at hand all the time” (De Beer, telephone interview, 14 October 2020). Samuels agrees that the practice of herding that has been done for hundreds of years is the best way to farm sustainably on the Karoo rangelands (telephone interview, 15 October 2020). He argues that fencing and paddocking, which are concepts that were brought to southern Africa from Europe and North America, are more suited to farming in high-rainfall areas than in semi-desert regions such as the Karoo (Samuels, telephone interview, 15 October 2020).

3.1.3. The views of herders and the opportunity for further research

My final research question focused on the herders themselves and the extent to which their voices have been included in the debates on herding as a livestock management tool. This research question was central to my original research project, as envisaged prior to the outbreak of the COVID-19 pandemic. Although I was unable to research it directly, I have retained it in my revised set of research questions to highlight the importance of this issue.

The available evidence shows that herders in Namaqualand are generally older, retired men. Hawkins’ study, however, showed that there is interest among women towards herding, which may indicate that herding schools, such as the Herding Academy, are attracting a more diverse group to the practice. At the same time, the findings revealed various challenges that may disincentivise young Karoo residents, including the relative isolation of herders, extreme weather conditions, tenure rights of herders and their families, and the lack of opportunity for career growth. However, some of my informants saw herding is a rewarding job because it promotes the regeneration of valuable traditional skills and knowledge systems, and the increase in wages from farm workers to herders can act as an incentive for the youth.

In order to bring their voices into the debates, further research on the views of farm workers and local residents will need to be conducted. Unfortunately, I was not able to explore this issue as originally intended because of the risk of potential transmission of the virus between myself and my informants as well as national lockdown restrictions that restricted non-essential travel. This limited my ability to understand the complex social dynamics on farms from the viewpoint of farm workers and farmers. In part, the underrepresentation of workers and farmers in my

participant pool was an intentional decision. I decided that, by embracing this project as a pilot to a larger study, I would use the COVID-19 limitations as an opportunity to locate herding in the existing debates, and my interviews were thus aimed at filling the gaps in the literature.

Overall, the COVID-19 pandemic has affected my ability to achieve the objective of my original research project. Travelling to the Karoo would have been invaluable. I believe that first-hand experiences have intangible impacts on a person's ability to write about a place and make judgements on best practice. I have not experienced the harsh reality of a dry, hot Karoo summer or a cold winter's night in the sub-zero temperatures. Most importantly, I have not had the opportunity to engage with people in the field.

3.2. Conclusion: the contribution of herding to sustainable agriculture in the Karoo

In an attempt to ascertain whether herding can contribute to sustainable agriculture, I must go back to my understanding of the concept. My understanding of sustainable agriculture in the Karoo considers the interconnectivity of social and ecological systems and is made up of biodiversity conservation, human-wildlife conflict management, and social justice.

The two first aspects of sustainable agriculture in the Karoo, namely biodiversity conservation and human-wildlife conflict management, have the potential to be realized through the implementation of human herding on commercial farms. I believe that the findings from this research project illustrate that if the practice is evaluated according to Holden *et al.*'s (2017:220) environmental limitations, herding emerges as a favourable rangeland and livestock management system on two grounds. Firstly, it allows for a flexible grazing system that can respond more effectively to the impacts of climate change on the productive capacity of Karoo rangeland. Secondly, it can minimize the rate of biodiversity loss by reducing farmer-jackal conflict and alleviating the impacts of selective grazing on plant species composition in the Karoo.

While it is not clear to what extent herding wages will contribute to improved livelihoods, herding offers the opportunity of improved employment conditions for farm workers and thus potentially improved lifeways for them and their families. Herding is therefore presented as one avenue for positive economic development, although the benefits would only spread to

relatively few families. Nevertheless, the widespread employment of herders could contribute to a marginally fairer distribution of the productive gains among farmers and farm workers.

Overall, my findings have taught me that what is viable in the agricultural sector is not always desirable. My findings from the literature and interviews suggest that herding, at whatever scale can be realised, is worthy of consideration as a grazing system in the Karoo for rangeland conservation and as a non-lethal predator control. However, these advantages have to be examined in the social and economic context of the Karoo. Most reservations from my informants towards herding could be attributed to one or another social concern, whether it was the perceived unreliability or incapability of herders, wage disputes, an increased social responsibility, a loss of control related to the Extension of Security of Tenure Act, or the issue of physical security. O'Connor captures the complexity of the issue:

I'd be interested whether that reserve about having herders would hold in other parts of the continent. I think one has to get down to the root cause of why people are apprehensive of herding. Is it actually in terms of security, that they don't want anyone around, and that security is of such paramount importance that you actually discount the other benefits? Or is it because you actually don't agree that herding would have any benefit? (telephone interview, 13 October 2020).

As with Holden *et al.*'s (2017) model of sustainable development, where the overachieving of one or more moral imperative cannot substitute for the underachieving of another imperative, the same logic applies to herding. In order for me to present herding as a practice that can contribute to sustainable agriculture, I must be able to show that it contributes to social justice, which I am unable to do without engaging fully with herders, their families, and communities.

A larger study is required if we are to understand how the Karoo can overcome the entanglement of these issues, but it may point towards a system of incentivisation, where the state could play a role in subsidising the training and placement of herders in a similar way to the previously subsidised erecting of fences. Furthermore, the widespread employment of herders would require interventions aimed at reducing social and racial tensions and promoting a more equitable environment in the Karoo. Going forward, it would be valuable to investigate the perceptions of many farmers to get a better understanding of how they view the practice and the people, as well as their willingness to consider it as a livestock management system.

The value in this project is in its extensive review of the existing literature and the foundation that it has laid for a larger study. This Honours research project has investigated herding's contribution to sustainable agriculture, but the inquiry is just starting.

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Samuels, I. 2020. Telephone interview. 15 October, Cape Town

Schumann, B. 2020. Correspondence. 19 October, Cape Town

Viljoen, N. 2020. Correspondence. 27 October, Cape Town

Appendix A: Invitation to participate

Dear _____

My name is Abigail Gildenhuis from the University of Stellenbosch. I am doing my Sociology Honours research project on herding on commercial farms in the Karoo. My supervisor is Prof Cheryl Walker, DSI/NRF SARChI Chair in the Sociology of Land, Environment & Sustainable Development.

I am writing to invite you to take part in my research as I am interested in your perspective on the debates surrounding herding in the Karoo. I believe your input can contribute to my understanding of the viability of herding on commercial farms and its social and environmental advantages and/or drawbacks.

The interview will take place between the 12-30th October 2020, either via email, the telephone, or a Microsoft Teams call, whichever is most convenient for you; if via a call it will be at a time to suit you. If you are interested, please see the consent form, which contains more information about the study, your right to withdraw, and how the data you provide will be stored and used.

If you have any questions, please contact me on this email address (abigildenhuis@gmail.com).

Thank you for your consideration. I look forward to hearing from you.

Kind regards

Abigail Gildenhuis

Appendix B: Written consent form



UNIVERSITEIT • STELLENBOSCH • UNIVERSITY
jou kennisvennoot • your knowledge partner

STELLENBOSCH UNIVERSITY CONSENT TO PARTICIPATE IN RESEARCH

You are invited to take part in a study conducted by Abigail Gildenhuis from the Department of Sociology and Social Anthropology at Stellenbosch University. I would appreciate your contribution to my project.

1. PURPOSE OF THE STUDY

My project is aimed at understanding the arguments surrounding the social, environmental, and economic advantages of herding on commercial farms in the Karoo. I am working within a sustainable development framework and exploring issues related to herding such as the history of the practice, farmer-jackal conflict, rangeland degradation, and grazing management practices.

2. WHAT WILL BE ASKED OF ME?

If you agree to take part in this study, you will be asked to take part in an interview via email exchange. The discussion will pertain to your work/ advocacy/ opinion on the debates related to herding on commercial farms.

3. POSSIBLE RISKS AND DISCOMFORTS

I consider the level of risk to you, the participant, as low, considering the impersonal nature of the topic of the study. I understand that participation may be inconvenient for you, and therefore participation is entirely voluntary.

4. POSSIBLE BENEFITS TO INFORMANTS AND/OR TO THE SOCIETY

The benefit to you for participating in this study is to further add to an understanding of herding's contributions to sustainable agriculture. Potential benefits to society include that the agricultural sector could gain insights into whether or not herding is a solution to combat some of farmers' challenges related to livestock predation and rangeland conservation.

5. PAYMENT FOR PARTICIPATION

You will not be compensated for participation in this study.

6. PROTECTION OF YOUR INFORMATION, CONFIDENTIALITY, AND IDENTITY

Any information you share with me during this study and that could possibly identify you as a participant will be protected. This will be done by presenting your contributions through the use of pseudonyms and paraphrasing unless you explicitly agree to being identified. Any data obtained from you will be stored securely on my private computer drive and my external hard drive. No one other than myself and my supervisor will have access to your private information. The recording of the interview, if

conducted telephonically or via Microsoft Teams, will be subject to your consent. No one other than myself and my supervisor will have access to these recordings, and they will be erased on completion of the submission of my research project if you wish. If you agree, they may be archived on a secure password-protected site of the Research Chair in the Sociology of Land, Environment, and Sustainable Development at the Department of Sociology and Social Anthropology, Stellenbosch University for future research purposes; you will have the right to review any transcripts or recordings that I have made before agreeing to their being saved in this way.

If you wish to be considered as a resource for future studies on the topic, your contact details will also be shared with the Research Chair in the Sociology of Land, Environment, and Sustainable Development at the Department of Sociology and Social Anthropology, Stellenbosch University. This sharing of your contact information will be subject to your explicit consent.

7. PARTICIPATION AND WITHDRAWAL

As mentioned before, participation is entirely voluntary. You can choose whether to be in this study or not. If you agree to take part in this study, you may withdraw at any time without any consequence. You may refuse to answer any questions that you do not want to answer.

8. RESEARCHERS' CONTACT INFORMATION

If you have any questions or concerns about this study, please feel free to contact me, Abi Gildenhuys, at abigildenhuys@gmail.com and/or my supervisor, Professor Cheryl Walker, at cjwalker@sun.ac.za.

9. RIGHTS OF RESEARCH INFORMANTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights, or remedies because of your participation in this research study. If you have questions regarding your rights as a research participant, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development.

DECLARATION OF CONSENT BY THE PARTICIPANT

As the participant I confirm that:

- I have read the above information and it is written in a language that I am comfortable with.
- I have had a chance to ask questions and all my questions have been answered.
- All issues related to privacy, and the confidentiality and use of the information I provide, have been explained.

By signing below, I _____ agree to take part in this research study, as conducted by _____

Signature of Participant

Date

Appendix C: Aide Memoire

The questions are grouped according to each debate. They do not constitute a questionnaire but offer guidelines to assist in structuring the interview according to key themes. Specific sets of questions may be left out or altered according to their relevance for the contribution of the individual participant.

Questions related to ecology:

1. Do you consider herding to be a viable option for farmers compared to other established practices?
2. What role can herding play in rangeland conservation?
3. What role can herding play in livestock and predator management?
4. Which livestock grazing management practice/s do you consider most appropriate for the unpredictable climate of the Karoo?

Questions related to the social and economic viability/ desirability:

1. What are the costs involved in implementing herding that farmers might incur?
2. What do you consider the main social advantage of herding, if any?
3. What do you consider the main social barriers related to herding, if any?
4. Why do you think there is a revived interest in the age-old practice of herding?

Questions related to skills and perceptions:

1. What are the skills that herders need to be successful?
2. Do you think that herding is an attractive role for young locals?

Questions related to farmers' experiences (for farmers only):

1. How long have you had/ worked on the farm?
2. Do you experience problems with predators such as jackal or caracal?
 - 2.1. If yes, how do you manage predation?
3. Do you have herders on your farm?

- 3.1. If yes, what do you think are the benefits of having a herder with the livestock?
- 3.2. If no, what is your perception of herding?

Closing questions:

1. What do you perceive to be herding's main advantages or disadvantages in an area such as the Karoo?
2. Any other comments?

Appendix D: Research Ethics Committee notice of approval



NOTICE OF APPROVAL

REC: Social, Behavioural and Education Research (SBER) - Initial Application Form

14 October 2020

Project number: 16873

Project Title: Herding as a contribution to sustainable agriculture in the Karoo: an exploration of key debates

Dear Miss Abigail Gildenhuis

Your REC: Social, Behavioural and Education Research (SBER) - Initial Application Form submitted on 12 August 2020 was reviewed and approved by the REC: Social, Behavioural and Education Research (REC: SBE).

Please note below expiration date of this approved submission:

Ethics approval period:

Protocol approval date (Humanities)	Protocol expiration date (Humanities)
14 October 2020	13 October 2023

GENERAL REC COMMENTS PERTAINING TO THIS PROJECT:

INVESTIGATOR RESPONSIBILITIES

Please take note of the General Investigator Responsibilities attached to this letter. You may commence with your research after complying fully with these guidelines.

If the researcher deviates in any way from the proposal approved by the REC: SBE, the researcher must notify the REC of these changes.

Please use your SU project number (16873) on any documents or correspondence with the REC concerning your project.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

CONTINUATION OF PROJECTS AFTER REC APPROVAL PERIOD

You are required to submit a progress report to the REC: SBE before the approval period has expired if a continuation of ethics approval is required. The Committee will then consider the continuation of the project for a further year (if necessary).

Once you have completed your research, you are required to submit a final report to the REC: SBE for review.

Included Documents:

Document Type	File Name	Date	Version
Data collection tool	Gildenhuis_Aide Memoire	10/07/2020	2
Recruitment material	Gildenhuis_Invitation to participate	10/07/2020	2
Budget	Gildenhuis_Research project budget	10/07/2020	1
Research Protocol/Proposal	Gildenhuis_Research Proposal	12/08/2020	2
Informed Consent Form	Gildenhuis_Written consent form	12/08/2020	3
Informed Consent Form	Gildenhuis_Verbal informed consent script	12/08/2020	3
Default	Gildenhuis_Response Letter	12/08/2020	1

If you have any questions or need further help, please contact the REC office at cgraham@sun.ac.za.

Sincerely,

Clarissa Graham

REC Coordinator: Research Ethics Committee: Social, Behavioral and Education Research

*National Health Research Ethics Committee (NHREC) registration number: REC-050411-032.
The Research Ethics Committee: Social, Behavioural and Education Research complies with the SA National Health Act No.61 2003 as it pertains to health research. In addition, this committee abides by the ethical norms and principles for research established by the Declaration of Helsinki (2013) and the Department of Health Guidelines for Ethical Research: Principles Structures and Processes (2nd Ed.) 2015. Annually a number of projects may be selected randomly for an external audit.*

Principal Investigator Responsibilities

Protection of Human Research Informants

As soon as Research Ethics Committee approval is confirmed by the REC, the principal investigator (PI) is responsible for the following:

Conducting the Research: The PI is responsible for making sure that the research is conducted according to the REC-approved research protocol. The PI is jointly responsible for the conduct of co-investigators and any research staff involved with this research. The PI must ensure that the research is conducted according to the recognised standards of their research field/discipline and according to the principles and standards of ethical research and responsible research conduct.

Participant Enrolment: The PI may not recruit or enrol informants unless the protocol for recruitment is approved by the REC. Recruitment and data collection activities must cease after the expiration date of REC approval. All recruitment materials must be approved by the REC prior to their use.

Informed Consent: The PI is responsible for obtaining and documenting affirmative informed consent using **only** the REC-approved consent documents/process, and for ensuring that no informants are involved in research prior to obtaining their affirmative informed consent. The PI must give all informants copies of the signed informed consent documents, where required. The PI must keep the originals in a secured, REC-approved location for at least five (5) years after the research is complete.

Continuing Review: The REC must review and approve all REC-approved research proposals at intervals appropriate to the degree of risk but not less than once per year. There is **no grace period**. Prior to the date on which the REC approval of the research expires, **it is the PI's responsibility to submit the progress report in a timely fashion to ensure a lapse in REC approval does not occur**. Once REC approval of your research lapses, all research activities must cease, and contact must be made with the REC immediately.

Amendments and Changes: Any planned changes to any aspect of the research (such as research design, procedures, participant population, informed consent document, instruments, surveys or recruiting material, etc.), must be submitted to the REC for review and approval before implementation. Amendments may not be initiated without first obtaining written REC approval. The **only exception** is when it is necessary to eliminate apparent immediate hazards to informants and the REC should be immediately informed of this necessity.

Adverse or Unanticipated Events: Any serious adverse events, participant complaints, and all unanticipated problems that involve risks to informants or others, as well as any research-related injuries, occurring at this institution or at other performance sites must be reported to the REC within **five (5) days** of discovery of the incident. The PI must also report any instances of serious or continuing problems, or non-compliance with the RECs requirements for protecting human research informants.

Research Record Keeping: The PI must keep the following research-related records, at a minimum, in a secure location for a minimum of five years: the REC approved research proposal and all amendments; all informed consent documents; recruiting materials; continuing review reports; adverse or unanticipated events; and all correspondence and approvals from the REC.

Provision of Counselling or emergency support: When a dedicated counsellor or a psychologist provides support to a participant without prior REC review and approval, to the extent permitted by law, such activities will not be recognised as research nor the data used in support of research. Such cases should be indicated in the progress report or final report.

Final reports: When the research is completed (no further participant enrolment, interactions or interventions), the PI must submit a Final Report to the REC to close the study.

On-Site Evaluations, Inspections, or Audits: If the researcher is notified that the research will be reviewed or audited by the sponsor or any other external agency or any internal group, the PI must inform the REC immediately of the impending audit/evaluation.