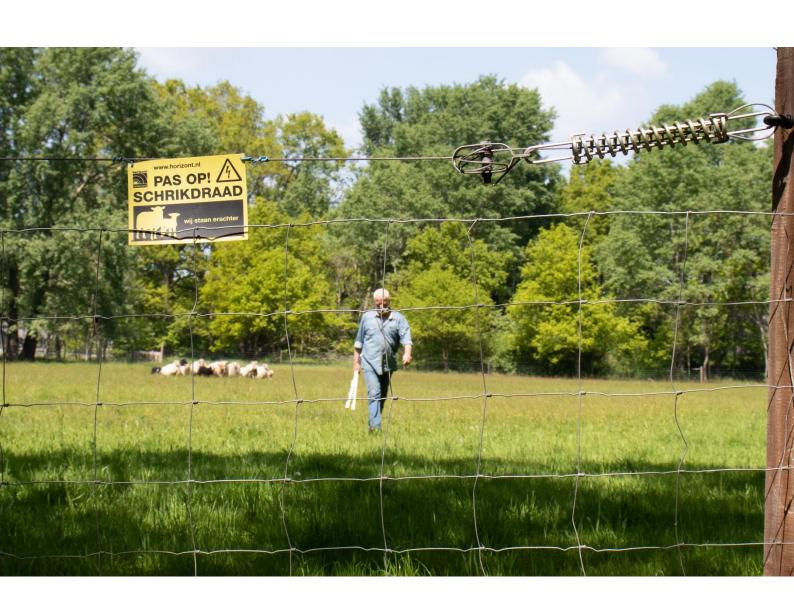
Living in a multispecies landscape: An exploration of sheep farmers' perceptions and experiences of human-wolf coexistence in the Netherlands

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Cover page photo: A sheep farmer walking his sheep out of his protected meadow with fixed wolfaversive fencing. Sign reads: "WATCH OUT! ELECTRIC FENCE" (Author's own).



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Summary

Human-wildlife conflict, such as livestock depredation, is increasing worldwide. To minimize human-wildlife conflicts, governments focus primarily on technical and financial fixes. Nonetheless, conflict is rarely resolved despite the implementation of these measures. This insight led to the notion that human-wildlife conflicts are not per se *with* wildlife, but rather between human stakeholder *about* wildlife. A growing focus on the more holistic term of human-wildlife coexistence (instead of conflict), which includes local people's perceptions and experiences, is therefore seen as a positive development.

Still, a significant knowledge gap concerning human-wildlife coexistence exists in the form of how to effectively enable and govern human-wildlife coexistence. Moreover, critics argue that human-wildlife coexistence has become excessively human-centred and further argue that research into human-wildlife coexistence is narrow because it often includes just one non-human species and identify this as an important reason for why coexistence governance is still insufficient in many cases.

In contrast to human-wildlife coexistence, multispecies sciences recognize non-human species as active co-creators of the landscapes we inhabit, and of the perceptions and experiences we have in relation to the landscape and to the multiple non-human species therein.

Therefore, to address coexistence's conceptual shortcoming of being human-centred and to decrease abovementioned knowledge gap, this research explored the case of sheep farmer-wolf coexistence in the Netherlands by using a multispecies approach. Through in-depth semi-structured interviews with sheep farmers and provincial government officials this research aimed at answering the following research question: "How do sheep farmers perceive and experience human-wolf coexistence and how can a multispecies approach contribute to the understanding of coexistence and the governance thereof?"

The findings illustrate that sheep farmers perceive and experience many challenges concerning 1) the threat of sheep depredation by especially roaming wolves; 2) a lack of knowledge on how to adapt to wolves; 3) the implementation of preventive measures; 4) the ambiguity of wolf governance. These challenges were found to be embedded in and influenced by: sheep farmers' notions of *out-of-placeness*; intraspecies differences between roaming wolves and settled wolves; multispecies relations between sheep farmers, their sheep, wolves, and other wildlife species; established sheep farming practices in a changing landscape; and biopolitical decisions that are perceived to favour wolves.

In conclusion, the use of a multispecies approach resulted in new understandings of sheep farmer-wolf coexistence in the Netherlands. Therefore, it is recommended that future research into human-wildlife coexistence, and coexistence governance includes a multispecies approach.

Keywords: human-wolf coexistence; human-wildlife conflict; multispecies approach; multispeciesism; sheep farmers; wolves.

I am not against the wolf, I want to learn to coexist with the wolf, but I simply don't really know how yet.

BE, Noord-Brabant

Table of contents

Acknowledgements	3
Summary	4
Table of contents	6
1 - Introduction	8
2 - Concepts and Theories	12
2.1 - Human-wildlife conflict and coexistence	13
2.2 - Multispeciesism	17
2.3 - Conceptual framework	23
3 - Legal framework for wolves and sheep	24
4 - Methodology	25
4.1 - Study area	25
4.2 - Research participants: Sheep farmers	25
4.3 - Research participants: Provincial government officials	26
4.4 - BIJ12	27
4.5 - Data collection	27
4.6 - Data processing	31
4.7 - Research framework	31
4.8 - Reflection on positionality	31
4.9 - Limitations	32
5 - Results	33
5.1 - Presence of wolves in the Netherlands	33
5.2 - Sheep depredation	36
5.3 - (Co-)adaptation to the presence of wolves and sheep depredation	39
5.4 - Wolf governance and management in the Netherlands	42
5.5 - Provincial government officials' views	51
6 - Discussion	57
6.1 - Being(s) in and out of place	57
6.2 - Co-creating a multispecies landscape	58
6.3 - Caring for or killing of	60
6.4 - Theoretical implications	61

6.5 - Limitations	62
6.6 - Future research agenda	63
7 - Conclusion	64
8 - Literature	67
9 – Appendices	72

1 - Introduction

In an increasingly crowded world, humans and wildlife live in ever closer proximity to one another and interactions between humans and wildlife become more frequent. Habitat loss, fragmentation, and degradation, land use change, human population growth, and climate change are some of the many causes for increasing competition over resources and the landscape between people and wildlife (Gross et al., 2021; Kansky et al., 2016; Marchini et al., 2019). As a consequence, in these shared landscapes human-wildlife conflict – such as loss of crops and livestock to wildlife – is increasing (Barua et al., 2013; Gross et al., 2021).

Currently, governments usually attempt to mitigate and prevent human-wildlife conflicts with financial and technical fixes, for example by incentivizing livestock farmers to implement fences, guard dogs, or other repellents (Treves & Karanth, 2003). Studies have shown, however, that despite the implementation of technical and financial fixes, conflicts are rarely resolved, therefore suggesting that human-wildlife conflicts have deeper rooted causes (Dickman, 2010; Hill, 2015). It is therefore argued that human-wildlife conflicts are not necessarily conflicts with wildlife, but rather conflicts between human stakeholders about wildlife (Hill, 2015; Peterson et al., 2010; Redpath et al., 2014; Young et al., 2010). Consequently, wildlife and conservation scientists have argued that research into human-wildlife interactions should focus on local perceptions and experiences and on human-human relations, instead of technical and financial fixes alone (Carter & Linnell, 2016; Dickman, 2010; Dorresteijn et al., 2016; Frank, 2016; Hill, 2004; Hill, 2015; Manfredo & Dayer, 2004; Redpath et al., 2015; White & Ward, 2010).

Recently, the term human-wildlife coexistence has gained traction in wildlife science, and attempts to approach human-wildlife interactions more holistically by emphasizing relations between humans and by conceptualising human-wildlife interactions as potentially both negative and positive (Frank, 2016; Gross et al., 2021; Marchini et al., 2019). Moreover, important aspects of human-wildlife coexistence are a persistent wildlife population, co-adaption between humans and wildlife in shared landscapes, tolerable levels of risk for both humans and wildlife, and effective governance of human-wildlife interactions (Carter & Linnell, 2016; Frank, 2016; Kansky et al., 2016; König et al., 2020; Marchini, et al., 2019).

While this definition emphasizes the significance of wildlife governance and management for enabling coexistence between people and wildlife, governance and management is simultaneously the crux, since how to govern coexistence is still a huge knowledge gap (Carter & Linnell, 2016; Gross et al., 2021; Marchini et al., 2019; Pooley et al., 2020). In this regards, most wildlife researchers emphasize the importance of focusing on local perceptions, experiences and realities (Dorresteijn et al., 2016; Gross et al., 2021; Kansky et al., 2016; König et al., 2020), and specifically on local perceptions of tolerance (Frank, 2016; Kansky et al., 2016).

A growing amount of scholars criticize, however, that due to coexistence's emphasis on human perceptions, practices and relations, it is a fundamentally human-centred approach (Chapron & López-Bao, 2020; Marchini et al., 2019; Toncheva & Fletcher, 2021). Critics argue that the current approach neglects the active role of non-human species in co-creating and shaping the landscapes we inhabit (Toncheva & Fletcher, 2021), and that the focus on tolerance reflects the notion that humans have the right to chose with which non-human species they share the landscape and that it "sends the message that these [non-human] species do not truly belong to the places they occur" (Chapron & López-Bao, 2020, p. 799). Moreover, others argue that the knowledge gap considering coexistence governance is caused by a narrow focus of coexistence researchers on the interactions between people and just one species of wildlife, instead of multiple (Marchini et al., 2019).

It seems that to gain new insights into human-wildlife coexistence and the governance thereof, it is necessary to leave this human-centred approach behind and acknowledge the roles non-human species have in co-creating coexistence, or in Buller's (2015) words "to come to some emergent knowing of non-humans: their meaning (both materially and semiotically); their 'impact' on, or even co-production of, our own practices and spaces; and our practical and ethical interaction with and/or relationship to them" (p. 379).

Emerging fields in this regards are those of animal geography and multispecies ethnography. The essence of these multispecies approaches builds on the notion that non-human species have agency and therefore the capability to co-create, shape, structure, and form the landscapes we inhabit, and in extent to co-create human practices, perceptions, and experiences (Buller, 2015; Drenthen, 2020; Gibbs, 2021; Hovorka, 2019; Hribal, 2007; Philo & Wilbert, 2005). Hence, instead of dismissing non-human species as having passive roles in human-wildlife interactions (as has been done in recent decades), multispecies scholars argue that non-human species hold active, meaningful, and valuable roles in shaping our experiences of human-wildlife coexistence. The extent to which non-human species co-create the multispecies landscape, partly depends on how people value these non-human species in relation to each other. These can be differing interspecies and intraspecies relationships and valuations (Arluke & Sanders, 1996; Gibbs, 2021; Hovorka, 2019). Moreover, multispecies scholars argue that people's relationship with one species is shaped by their relationships with other species, thus how people relate to wild animals can be influenced by how they relate to domestic animals for example (Hovorka, 2019).

As these differing intra-, inter-, and multispecies relations and valuations are also embedded in the politics and governance of human-wildlife coexistence, this study will further conceptualize the concept of biopolitics in relation to multispeciesism. Biopolitics touches upon the political decisions concerning the caring for or killing of non-human species (Hodgetts & Lorimer, 2020). These decisions are often based on contesting valuations between biodiversity (wild; predator; conservation) and biosecurity (domestic; prey; agriculture) (Gibbs, 2021; Hovorka, 2019; Ojalammi & Blomley, 2015), and often entail decisions about non-human movement and mobility, and lethal management of wildlife populations (Hodgetts & Lorimer, 2020; Ojalammi & Blomley, 2015).

To address human-wildlife coexistence's conceptual shortcoming of being human-centred and to decrease the knowledge gap concerning how to enable and govern human-wildlife coexistence, this research used a multispecies approach to explore a specific case of human-wildlife coexistence in the Netherlands.

A Dutch case study: The return of wolves in the Netherlands

Grey wolves, or Canis lupus (from now on simply called "wolf" or "wolves") once inhabited almost every corner of the European continent, including every province of the Netherlands (Deinet et al., 2013; Luiten van Zanden et al., 2021; Rigg et al., 2011). Decades of hunting, persecution and deforestation, however, caused their numbers and habitats to dwindle, resulting in scattered populations confined to south and north-eastern Europe by the 1970s (Deinet et al., 2013; Groot Bruinderink et al., 2012; Trouwborst, 2010). Due to a change in society's attitude towards them, and stringent European and national protection laws, wolves are on a significant comeback in Europe (Deinet et al., 2013; Fernández-Gil et al., 2018; Rigg et al., 2011). While this could be considered a conservation success, it gives rise to new challenges too. Wolves have been returning to areas considered to be part of their historical natural habitats, but these landscapes have changed significantly during their absence (Kuijper et al., 2019). Agriculture has been intensified,

while natural landscapes have been transformed into urban and rural ones (ibid.). Importantly, besides the fact that natural and cultural landscapes are increasingly intertwined, wolves are incredibly capable of living in human-dominated, cultural landscapes. As a consequence, both people and wolves claim similar parts of the landscape, resulting in more frequent and intensified human-wolf conflict in the form of livestock depredation and in some cases retaliatory killing of wolves. Moreover, a significant challenge is that with the long absence of wolves, both people and governments have largely forgotten how to live with and govern wolves in a shared landscape (Carter & Linnell, 2016; Kuijper et al., 2019).

The challenges of enabling and governing human-wildlife coexistence can be observed in the Netherlands, where wolves have returned in 2015 after an absence of approximately 150 years (Wolven in Nederland, n.d.). Many roaming wolves have traversed the country since then, and some even ended up settling (i.e. a wolf stayed in the same region for at least six months, see) in Gelderland, in the border area of Noord-Brabant and Limburg, and temporarily in Drenthe (BIJ12, 2020a; BIJ12, 2020b; BIJ12, 2020c; BIJ12, 2020d; BIJ12, 2021a; IPO, 2019). While some people are excited with the return of wolves, opponents argue that wolves no longer have a place in the human-dominated cultural landscapes of the Netherlands and state that wolves are a threat to both people and livestock (NoWolvesBenelux, n.d.). Livestock depredation has indeed increased rapidly since the first wolf sighting in 2015. Since then, 202 cases of livestock depredation by wolves have been confirmed, with more than half of them (120) in 2020 and 2021 alone (BIJ12, 2021b). These 202 cases resulted in 650 killed animals, of which 643 sheep, 3 fallow deer, 2 calves, 1 Highland cattle, and 1 goat (ibid.). Consequently, resistance amongst sheep farmers has grown, and even the broader public support, and positive attitudes have slightly decreased during 2020 (LNV, 2020a).

To mitigate and prevent sheep depredation by wolves, an interprovincial Wolvenplan (Wolf-plan) has been implemented that presents the guidelines considering the governance and management of wolves in the Netherlands (IPO, 2019). Following this Wolvenplan, the provincial governments of Drenthe, Gelderland, Noord-Brabant, and Limburg have implemented technical and financial measures, such as damage compensation in the case of sheep depredation by wolves. Drenthe, Gelderland and Limburg additionally provide subsidies to sheep farmers who are willing to implement wolf-aversive fences, while Noord-Brabant supplies emergency-kits on loan for when roaming wolves are in the area, consisting of wolf-aversive flex-nets (Provincie Noord-Brabant, n.d.).

Nonetheless, and despite the availability of these technical and financial measures, the implementation of preventive measures is still lacking, and sheep depredation occurs relatively frequent. Therefore, governmental wildlife management organisation BIJ12 and the Interprovincial Overleg (IPO) (governmental institute that represents the interests of all twelve provinces of the Netherlands) are increasingly interested in gaining insights into how sheep farmers perceive and experience the return of wolves in the Netherlands, and in extension how to enable and govern sheep farmer-wolf coexistence.

Research aim

Combining both the scientific and societal backgrounds, this study aimed to decrease the knowledge gap of how to enable and govern human-wildlife coexistence, and to fill human-wildlife coexistence's conceptual shortcoming of being a human-centred approach, by exploring sheep farmers' perceptions and experiences of human-wolf coexistence in the Netherlands, while using a multispecies approach. Moreover, the aim of this research was to explore how a multispecies

approach can contribute to a better understanding of people's perceptions and experiences of human-wildlife coexistence, and subsequently what recommendations can be made to improve coexistence governance. This research aim led to the following research questions.

Research question

How do sheep farmers perceive and experience human-wolf coexistence and how can a multispecies approach contribute to the understanding of coexistence and the governance thereof?

Sub-questions

- SQ1: How do sheep farmers perceive and experience the presence of wolves in the Netherlands?
- SQ2: How do sheep farmers perceive and experience the threat of sheep depredation by wolves?
- SQ3: How do sheep farmers perceive and experience (co-)adaptation to the presence of wolves and the threat of sheep depredation by wolves?
- SQ4: How do sheep farmers perceive and experience wolf governance and management in the Netherlands?
- SQ5: What are provincial government officials' views of wolf governance and management in relation to sheep farmers' perceptions and experiences of human-wolf coexistence?

Thesis structure

The structure of this thesis is as follows. Chapter two will elaborate on the concepts of human-wildlife coexistence, and multispeciesism. Chapter three will briefly present the legal framework concerning wolves and sheep in the Netherlands. Chapter four will present the methodology. Chapter five will present the findings of this study. Chapter six will then discuss the findings in the context of the scientific concepts. And finally, chapter seven will briefly summarize the research and draw a conclusion.

2 - Concepts & Theories

2.1 - Human-wildlife conflict and coexistence

Human-wildlife conflict

Historically, interactions between humans and wildlife (non-domesticated animals that live in the wild) were framed as human-wildlife conflict, emphasizing the negative interactions between humans and wildlife, often with wildlife being the instigator of conflict (Dickman, 2010; Frank, 2016; Kansky et al., 2016; Nyhus, 2016; Pooley et al., 2016; Redpath et al., 2015). This perspective primarily focuses on wildlife-induced impacts, such as wolves predating on farmers' sheep, and assumes that damages are the main cause of conflict (ibid.). Many wildlife scholars argue that this approach is rather static and superficial, because of its exclusive focus on wildlife impacts and therefore a focus on technical and financial fixes, such as the physical separation of sheep from wolves through the use of wolf-aversive fencing or the payment of damage compensation (Madden & McQuinn, 2014; Pooley et al., 2017). In addition, studies have shown that despite the implementation of these technical and financial fixes, conflicts are rarely resolved, therefore suggesting that human-wildlife conflicts have deeper rooted causes (Dickman, 2010; Hill, 2015).

As a result, critique on this conceptualization of human-wildlife conflict has grown, with scientists arguing that human-human relations significantly influence experiences of human-wildlife conflicts. Hence, many argue that human-wildlife conflicts are not conflicts with wildlife, but rather conflicts between human stakeholders - such as sheep farmers and government officials about wildlife (e.g. about how wildlife is governed and managed) with socio-cultural and political considerations at its core (Hill, 2015; Madden, 2004; Madden & McQuinn, 2014; Peterson et al., 2010; Redpath et al., 2014; Young et al., 2010). This notion led Young et al. (2010) to suggest to separate human-wildlife conflicts into two parts: 1) wildlife impacts, and 2) human conflicts. Moreover, the WWF also included this notion into their definition of human-wildlife conflict: "struggles that arise when the presence or behaviour of wildlife poses actual or perceived direct, recurring threats to human interests or needs, often leading to disagreements between groups of people and negative impacts on people and/or wildlife" (Gross et al., 2021, p. 6). Consequently, many wildlife and conservation scientists have argued that research into human-wildlife interactions should focus on local perceptions and experiences and on human-human relations, instead of technical and financial fixes alone (Carter & Linnell, 2016; Dickman, 2010; Dorresteijn et al., 2016; Frank, 2016; Hill, 2004; Hill 2015; Manfredo & Dayer, 2004; Redpath et al., 2015; White & Ward, 2010)

Despite these insights, human-wildlife conflict is currently still the primary focus in wildlife science. However, a shift can be observed from a focus on *conflict* exclusively, to also including *coexistence* (König et al., 2020; Marchini et al., 2019).

Human-wildlife coexistence

The concept of human-wildlife coexistence is a more holistic term, and attempts to address the limitations of the term human-wildlife conflict. In their latest report, the WWF, defines human-wildlife coexistence as referring "to people and wildlife existing in proximity to each other, whether in contentious, neutral, or beneficial coexistence [...] a dynamic state in which the interests and needs of both humans and wildlife are generally met" (Gross et al., 2021, p. 6). This definition illustrates that coexistence between species can refer to situations characterized by both positive and negative interactions. In this regards, Frank (2016) states that coexistence

"could refer to a peaceful coexistence or to coexisting while remaining rivals or adversaries" (p. 739).

One of the most regularly cited and most holistic definitions, however, comes from Carter and Linnell (2016), who define coexistence – and specifically human-*carnivore* coexistence – as a "dynamic but sustainable state in which humans and large carnivores co-adapt to living in shared landscapes where human interactions with carnivores are governed by effective institutions that ensure long-term carnivore population persistence, social legitimacy, and tolerable levels of risk" (p. 575). Coexistence is further defined as a state in which humans and wildlife exist or live together, while interacting in a certain space and time (Frank, 2016; Marchini et al., 2019).

From abovementioned definitions a couple of similar aspects that are at the core of coexistence can be derived, namely 1) the presence of humans and wildlife in a shared landscape; where 2) humans and wildlife live together with tolerable levels of risks and threat for both; furthermore 3) humans and large carnivores co-adapt to one another; and 4) all these aspects are effectively governed and managed, while being socially legitimate (Carter & Linnell, 2016; Frank, 2016; Gross et al., 2021; Marchini et al., 2019).

A shared landscape has a prominent place in most definitions. Carter and Linnell (2016), Frank (2016), and Marchini et al. (2019) all explicitly mention that humans and wildlife interact in a certain space and in shared landscapes. It presents the landscape as a significant domain in which human-wildlife interactions occur. In this regards, König et al. (2020) emphasize that multiuse landscapes, such as agricultural landscapes, are especially prone to human-wildlife interactions since they provide habitats for both humans and wildlife, and should thus enjoy special attention when it comes to studies into human-wildlife coexistence.

Dorresteijn et al. (2016) found that human-bear coexistence in Romania was influenced by how people perceived the relationship between bears and the landscape. Understanding of bear behaviour, for example, led to feelings of coexistence, while perceptions about insufficient or degrading bear habitats (i.e. through land use change), and increasing bear populations were detrimental to coexistence. Furthermore, people's own relationship with the landscape also influenced how coexisting with bears was experienced. A deep relationship between people and nature for example, led to increased positive perceptions of coexistence. Dorresteijn et al. (2016) thus found that perceptions of both human-landscape and bear-landscape relationships influenced how human-bear coexistence was experienced: "the landscape thus provides a sense of place as well as a daily arena for interaction, connection, and proximity" (p. 497).

Within these shared landscapes and next to the influence of the landscape, tolerance to risks such as sheep depredation is considered an essential part of coexistence (Carter & Linnell, 2016; Frank, 2016; Kansky et al., 2016). Frank (2016) even defines coexistence as "a state or a set of behaviours reflecting tolerance attitudes" (p. 740). Carter and Linnell (2016) further state that coexistence "necessitates human tolerance of these risks and bringing risks to tolerable levels" (p. 575). In the case of sheep farmer-wolf coexistence, this would thus imply that coexistence can only be achieved when sheep farmers are tolerant to the risk of sheep depredation. Kansky et al. (2016) state that to understand why people react differently to living with wildlife and the potential threats they can pose, it is critical to determine "the extent of stakeholder tolerance and the factors driving this tolerance" (p. 138). They emphasize that stakeholders such as sheep farmers, can have different reasons to be tolerant or intolerant to wildlife impacts (Kansky et al., 2016).

Co-adaptation between humans and wildlife is another crucial aspect of human-wildlife coexistence. Carter and Linnell (2016) state that adaption means "that humans and carnivores are able to change their behaviour, learn from experience, and pursue their own interests with respect to each other" (p. 577).

There are many cases known of wildlife adapting to humans and human areas by for example using overlapping spaces at different times of the day (e.g. becoming nocturnal) (Carter & Linnell, 2016; Nyhus, 2016). Wolves for example, are highly adaptable and can therefore live in many different landscape-types, including human-dominated ones (Deinet et al., 2013; Kuijper et al., 2019). There are examples in parts of Europe where wolves have become more secretive due to human presence (Nyhus, 2016). This illustrates the capabilities of animals to observe and interpret their landscape and adapt to the circumstances.

Human adaptation can both be lethal and non-lethal (Kuijper et al., 2019; Nyhus, 2016). Historically, lethal management practices have been widely used to eradicate entire species, but are currently primarily used to control wildlife populations or kill problematic or aggressive individuals (Nyhus, 2016). Non-lethal adaptation options are translocation, barriers and fences, guarding, and repellents (Carter & Linnell, 2016; Kuijper et al., 2016; Nyhus, 2016). In the Netherlands, non-lethal adaptation of humans to wolves is preferred (IPO, 2019), primarily through the implementation of wolf-aversive fences. Human adaptation is often determined by the governance and management of human-wildlife coexistence.

The significance of governance and management for human-wildlife coexistence is widely emphasized in the literature, however, how to effectively govern and manage human-wildlife coexistence is still a huge knowledge gap (Carter & Linnell, 2016; Gross et al., 2021; Marchini et al., 2019; Pooley et al., 2020). According to Kuijper et al. (2019), current wolf governance and management in Europe focuses on four strategies (Table 1). All of these strategies are technically and financially orientated, despite the growing (scientific) recognition of the complex sociocultural and political factors that are inherent to experiences of human-wolf coexistence (Madden & McQuinn, 2014; Pooley et al., 2017).

Table 1 Wolf governance and management strategies in Europe and their impact on conflict (Adapted from Kuijper et al., 2019).

Strategy	Details	Societal impact
Population control	Lethal control of wolf populations	Can decrease human-wolf conflicts, but not effective when surrounded by unmanaged populations, because more wolves will arrive from other areas. Especially young wolves that are more likely to attack livestock
Protection & compensation	Free expansion and settlement of wolf populations. Sheep farmers get compensated for losses	Increases human-wolf conflicts, because wolves can freely roam the landscape and will likely predate on livestock they encounter. Compensation and education is required
Fencing	Physically separating wolves from people and livestock by implementing wolf-aversive fencing. Two options: "fencing out" to keep wolves out of areas such as meadows, or "fencing in" to keep wolves in areas such as nature reserves	Eliminates human-wolf conflict, but can be costly in large areas and restricts accessibility for both humans and wildlife. Subsidies are likely needed to support sheep farmers in implementing fences
Managing behaviour of wolves and humans	Creating "soft" boundaries through repellents, deterrents, and aversive conditioning, i.e. with guard dogs	Can decrease human-wolf conflict, but more testing of methods is required because it is still unclear whether "soft" boundaries are effective against wolves

Scientists are exploring ways to govern and manage human-wildlife coexistence, and Dorresteijn et al. (2016) recommend some governance and management interventions, such as comanagement with local people, creating shared responsibilities, focusing on increasing knowledge on the particular animal, and enabling local people to use lethal management to control the situation. Nonetheless, how to govern coexistence stays challenging, because coexistence is a "dynamic process of continuing negotiations between the different stakeholder groups" and there is not one blueprint solution (König et al., 2020, p. 793).

In relation to this, Dorresteijn et al. (2016), Gross et al. (2021), Kansky et al. (2016), and König et al. (2020), further argue the significance of local perceptions, realities and contexts in governing, managing, and researching human-wildlife coexistence.

To realize effective governance, Frank (2016) and Kansky et al. (2016) combine the need for local perceptions with levels of tolerance. Frank (2016), for example, introduces the "conflict-to-coexistence continuum" which is primarily based on tolerance levels. According to Frank (2016) this framework can assist policymakers in how to best address human-wildlife coexistence, explaining that the implementation of for example lethal management of wildlife is not an efficient strategy if the people involved are tolerant for the species and willing to adapt to their presence.

Furthermore, Kansky et al. (2016) conducted a meta-analysis of tolerance attitudes and perceptions towards damage-causing mammals, and from it developed a "wildlife tolerance model" focusing on five tolerance indicators that affect perceptions of coexistence (Table 2). Nonetheless, focusing on local perceptions, experiences and realities, or on tolerance for wildlife has not filled the knowledge gap of how to achieve and govern coexistence.

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Table 2 Wildlife tolerance	indicators	l Kanskv et al	2016. p. 1381.

	Tolerance indicator	Details
1	Spatial	Tolerance to spatial proximity
2	Damage	Tolerance to undergoing monetary costs due to a species
3	Killing	Tolerance to killing under different contexts
4	Population size	Population size of a species that a person is willing to accept
5	Prevention	Ability and willingness to undergo extra costs (tangible and
		intangible) to apply mitigation measures that are effective,
		sustainable, legal and comply with welfare norms

Human-wildlife coexistence: The need for a multispecies approach

Some scholars criticize that despite coexistence's emphasis on living in a *shared* landscape, and on *co*-adaptation, the concept of human-wildlife coexistence is a fundamentally human-centred approach (Chapron & López-Bao, 2020; Marchini et al., 2019; Toncheva & Fletcher, 2021).

With coexistence research almost exclusively focusing on local *human* perceptions, and conflicts *between humans* over wildlife, this becomes clear. Toncheva and Fletcher (2021) argue that approaching human-wildlife interactions – i.e. such as sheep farmer-wolf coexistence – as a conflict *over* wolves, dismisses wolves as being passive entities and neglects their active role in co-creating the full coexistence (or conflict) context.

Chapron and López-Bao (2020) further criticize coexistence's emphasis on tolerance, because tolerance implies that "people dislike what they are tolerating, have the power to eliminate it, but refrain from it" and that it "sends the message that these species do not truly belong to the places they occur" (Chapron & López-Bao, 2020, p. 799). In relation, in their wildlife tolerance model,

Kansky et al. (2016) define tolerance as "the ability and willingness of an individual to absorb the extra potential or actual costs of living with wildlife" (p. 138). Suggesting that living with wildlife is a "cost" that people may or may not be willing to accept. Tolerance therefore dismisses wildlife almost as second class inhabitants of a shared landscape that are to be tolerated or not, and subsequently as being intruders in a human landscape.

Additionally, Marchini et al. (2019) argue that an important factor for what they call the "research-implementation gap" (which refers to their observation that increased understanding of human-wildlife interactions has not yet been translated into effective governance and management) is the fact that most human-wildlife coexistence researchers focus on the relations between humans and one single non-human species (e.g. sheep farmer-wolf), while policymakers work at larger scales and are required to take into account multiple species (i.e. wild and domestic). Carter and Linnell (2016) illustrate this shortcoming almost perfectly in their conceptualisation of coexistence: "our concept of coexistence includes both *human-carnivore* and *human-human* interactions" (p. 575). Here, it becomes clear that, in the case wolves in the Netherlands for example, this conceptualisation does not allow for other relationships than human-wolf, such as human-sheep, or sheep-wolf.

While the focus on local perceptions and experiences is paramount for understanding and achieving human-wildlife coexistence, it appears that the shift from human-wildlife conflict to human-human conflict has resulted in a conceptualization of human-wildlife coexistence, in which non-human species have been degraded to passive spectators in coexistence or conflict. Nonetheless, as Toncheva and Fletcher (2021) state: "a growing body of 'more-than-human' research challenges this perspective as 'anthropocentric,' arguing that nonhumans should be considered 'co-constitutive actors' of the spaces they occupy" (p. 2), illustrating the need to include and acknowledge the roles of non-human species in co-creating the landscape, coexistence, and the experiences and governance thereof. This study's use of a multispecies approach in relation to human-wildlife coexistence, can hopefully decrease the knowledge gap of how to achieve and govern human-wildlife coexistence.

2.2 - Multispeciesism

This section will discuss some of the most important aspects of multispeciesism and conceptualise the concept for this research. First, the different ways to categorize, value and position non-human species is discussed. Second, non-human agency is discussed. Third, the consequences of non-human agency in a multispecies landscape are discussed. Fourth, biopolitics as an aspect of multispeciesism will be explained.

Human valuations of non-human species

To explore cases of human-wildlife coexistence, it is crucial to understand how humans relate to the non-human species they share the landscape with. This includes not only the acknowledgement of non-human agency (which will be discussed in the next section), but also the understanding of the rights, duties, and expectations we assert on both ourselves and non-human species (wild and domestic). Drenthen (2020) for example, states that there are three types of non-human animals: domestic, liminal, and wild. Humans relate differently to each type of non-human animal.

First, however, it is important to situate these different types of animals in relation to humans and to each other. Callicott (1988) for example, described three nested communities: the biotic community, the mixed community, and the human community (Figure 1). The human community can include our family members, or friends; the mixed community additionally includes domestic animals, such as sheep; and the biotic community additionally includes wild animals (and other lifeforms), such as wolves (Callicott, 1988; Drenthen, 2020). Callicott (1988) argues that in every community and for members of the different communities rights, duties, and rules vary. If humans kill another human for example, that is murder and illegal, but if a wolf kills a wild deer, this is the normal functioning of the ecosystem (Drenthen, 2020).

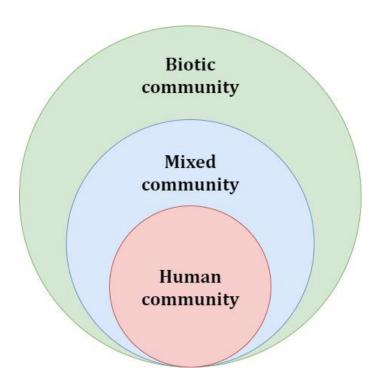


Figure 1 Adaptation of Callicott's (1988) nested communities (Author's own).

Domestic animals are part of the mixed community consisting of humans and domestic non-human species (Callicott, 1988; Drenthen, 2020). This means they hold specific rights, but also duties and expectations. Next to passive rights (right to life, freedom, and ownership), all domestic animals hold active rights, which means that humans have a duty of care towards them, and have to make sure that they are provided in their livelihood needs (Drenthen, 2020). This duty to take care of them derives from the fact that due to the process of domestication, they have become fully dependent on humans, and are, in Callicott's (1988) words "creations of man" (p. 330). In practice this means that we have the duty to feed, them, give them shelter, and protect them from disease and predators, which is even obligated by law, in the Wet Dieren (2014) (Drenthen, 2020). Vice versa, domestic animals have certain duties towards humans as well. They are for example expected to behave as trustworthy members of the mixed community (Drenthen, 2020). In this context this could mean staying inside meadows, laying eggs, giving milk, and not being aggressive.

According to Drenthen (2020), liminal animals are non-domestic animals that have adapted to living in human environments, such as pigeons, rats, and mice. Liminal animals are different from wild animals, since liminal animals actively seek out human-dominated landscapes to live in. As they are not a member of the mixed community, they do not hold the same active rights as domestic animals (and therefore humans have no duty of care towards them).

Drenthen (2020) and Callicott (1988) identify wild animals as part of the biotic community, they are therefore not members of the mixed or human communities. In general, wild animals attempt to live their lives apart from humans and human environments. Environmental ethicist Peter Wenz (1988) and Drenthen (2020) argue that wild animals hold passive rights, meaning that they are entitled to be left alone as much as possible. Therefore, humans should minimize intervening in wild animals' lives, so that they can pursue their way of life (Callicott, 1988). Passive rights are derived from the notion that "wild" nature is a sovereign, resilient and autonomous entity, and that this autonomy should be respected (Drenthen, 2020). This contrasts with other views of nature as being primarily vulnerable and in need of protection. This second view is prominent in the Netherlands, and illustrated by the relatively intense management of natural landscapes (Drenthen, 2015; Drenthen, 2020). A critical question concerning wild animals (in contrast to domestic animals) is what we (humans) can expect or demand from them, when humans, domestic animals, and wild animals interact (Drenthen, 2020).

Inter- and intraspecies relations

Abovementioned valuations of non-human species result in different animal vs. animal relationships. These interspecies relationships can be based on human categorizations, such as domestic vs. wild, and their related socio-economic valuations such as agriculture vs. conservation (Hovorka, 2019). Other valuations of non-human species can be based on labels as charismatic, invasive, pests, keystone species, or endangered (Hovorka, 2019; Vaccaro & Beltran, 2009). Arluke and Sanders (1996) rank species according to what extent non-human species adhere to our expectations and demands of them. This results in categories such as (from best to worst): pets; lab and farm animals; and bad animals who "confuse their place, [...] stray from their place, [...] reject their place" (Hovorka, 2019, p. 752). Furthermore, natural distinctions can shape interspecies inequalities as well, such as predator vs. prey (Hovorka, 2019).

Next to interspecies relations, intraspecies relations and inequalities also occur. Intraspecies distinctions can emerge from the species' spatial context, their roles, and their value to humans (Hovorka, 2019). Lab rats for example are interpreted significantly different than their wild

counterparts, based on their spatial context (in a lab), their roles (experimental animal), and their value to humans (e.g. contributing to human health). Here, the differences between lab rats and wild rats are relatively apparent, however this is not always the case. Sometimes individual wild animals for example, distinct themselves from the collective of the species by presenting certain behaviour (Doubleday, 2018; Gibbs, 2021). Individual wolves that have specialized in predating on sheep, or have lost their fear of humans for example, are in some circumstances deemed problematic (IPO, 2019).

Non-human agency

Agency – "the ability to take action or to choose what action to take" (Cambridge Dictionary, 2021) - used to be a characteristic only ascribed to humans, and was one of the most prominent distinctions between humans and non-humans (Philo & Wilbert, 2005). Currently, agency is more widely recognized in non-human species as an inherent part of their being. According to Drenthen (2020) this means that they make own conscious decisions to form and give meaning to their own lives, and that they are active members of a shared world, instead of passive objects who live by the decisions and organisation (referring to all forms of human organisation, such as governance, management, law, policies, and the physical implications thereof) of humankind. Nonetheless, most humans continue to expect that our laws and organisations can effectively confine nonhumans to their *proper* place and expect them to adhere to our organisation (Drenthen, 2020; Hovorka, 2019; Ojalammi & Blomley, 2015). As Ojalammi and Blomley (2015) state, "animals are reduced into abstractions and manageable objects" (p. 52). Subsequently, as Drenthen (2020) argues, non-human species are seldom recognized as individual sovereign beings that would want to actively disengage themselves from human interventions, infrastructure, law or other forms of organisation. This disengagement is often interpreted as non-human species challenging or resisting human organisation (Hribal, 2007). In extension, Drenthen (2015) relates this agency to human-wildlife coexistence and states that "once we are confronted with species that have their own agency, that cannot fully be controlled, and that behave in ways that we do not always like, then it proves hard to co-exist and tolerate nature's autonomy" (p. 1).

So which non-human species have agency? Toncheva and Fletcher (2021) argue that agency should be attributed to "any thing that does modify a state of affairs by making a difference" (p. 4). This means that most non-human animals have agency, since most of them can modify circumstances. Hence, while most non-human species have some form of agency and therefore the capability to challenge or resist human organisation, how they exert this agency differs from species to species, and even between individuals of the same species (Donati, 2019; Gibbs, 2021). Hribal (2007) presents some of the forms domestic animals display their agency: "Donkeys have ignored commands. Mules have dragged their hooves. Oxen have refused to work. Horses have broken equipment. Chickens have pecked people's hands. Cows have kicked farmers' teeth out. Pigs have escaped their pens. Dogs have pilfered extra food. Sheep have jumped over fences." (p. 103). Drenthen (2020) further argues that wolves finding ways into meadows despite fencing is an example of wild animals' agency.

Whether domestic or wild, the perspective of non-human agency, as Toncheva and Fletcher (2021) state "enjoins us to understand nonhumans as actors who, together with humans, 'co-produce' a shared environment and [...] it implies that humans and nonhumans can and should share a common space in which nonhumans are considered not 'other' beings but rather fellow inhabitants of a shared world" (p. 4). Moreover, as Buller (2015) states, the recognition of non-human species as co-creators of the shared landscape encourages us (humans) to not only look at

non-human species as "the animal as it is seen" but rather as "the animal that sees" (p. 376), recognizing non-human species' own modes of perceiving, experiencing, and shaping the world.

A multispecies landscape: In and out of place

The world we inhabit is a multispecies landscape. Sometimes this is not particularly clear, but a simple example is the way we share our cities with birds (Drenthen, 2020). While we inhabit a shared landscape, humans still attempt to position non-human species in different spaces, or parts of the landscape. Philo and Wilbert (2005), argue that we link the "conceptual 'othering' (setting them apart from us in terms of character traits)" between humans and non-humans to a "geographical 'othering' (fixing them in worldly places and spaces different from those we humans tend to occupy)" (p. 10). In this sense, domestic animals are geographically positioned in cultural landscapes, whereas wild animals are positioned in natural landscapes (Drenthen, 2015; Drenthen, 2020; Ojalammi & Blomley, 2015). As Philo and Wilbert (2005) state: "zones of human settlement ('the city') are envisaged as the province of pets or 'companion animals (such as cats and dogs), zones of agricultural activity ('the countryside') are envisaged as the province of livestock animals (such as sheep and cows), and zones of unoccupied lands beyond the margins of settlement and agriculture ('the wilderness') are envisaged as the province of wild animals (such as wolves and lions)" (p. 10). We attempt to link species to a "proper place" or "animal space" that separates them from other species and landscapes (Philo & Wilbert, 2005). When species are in their "proper places" they can be considered to be *in place*.

To keep non-human species in their *proper places*, or *animal spaces*, we attempt to communicate to which spaces they have access and to which they do not (Drenthen, 2020; Hodgetts & Lorimer, 2020; Ojalammi & Blomley, 2015). One of the most implemented measures to convey these messages are (electrical) fences. And as discussed earlier, with the tactics of "fencing in" and "fencing out", fences can send the message to "keep in" or "keep out", sometimes simultaneously - think of a meadow where sheep have to keep in, and wolves out (Kuijper et al., 2019). Nonetheless, non-human species do not simply passively adhere to these messages, sometimes because they actively challenge it, and other times because we did not properly convey our message, despite the message being clear to us. Considering these interspecies communications, Drenthen (2020) and Buller (2015) argue, humans and non-humans have different modes of perceiving and experiencing the world. Whereas humans, for example, see a building, pigeons see a rocky cliff to make a nest. Hereby, they are not only seeing a rocky cliff, but projecting their reality and perceptions over that of ours. Furthermore, Ojalammi & Blomley (2015) emphasize that while fences attempt to create a separation between the "competing human logics of biosecurity and biodiversity" fences must actually be seen as a "product of human-animal entanglements in space" (p. 58), and therefore as overlapping and entangled human and nonhuman places.

Subsequently, as Drenthen (2020), Ojalammi and Blomley (2015), and Philo and Wilbert (2005) argue, these absolute distinctions (between culture vs. nature or human vs. non-human territories) cannot be made, neither conceptually, nor physically. Therefore, Drenthen (2020) argues that the landscapes that we inhabit are not spatially divided, but a multidimensional landscape, with messy, entangled, and overlapping claims and territories of multiple species, hence, a multispecies landscape. Because of this multidimensional landscape with multiple and sometimes conflicting claims, in which humans conceptually and geographically confine certain (types of) non-human species to specific landscapes or territories, it can occur that we humans perceive non-humans to be *out-of-place*. This happens when non-humans are leaving their *proper places* and enter what we perceive as human territory (Drenthen, 2020; Doubleday, 2018; Gibbs,

2021; Ojalammi & Blomley, 2015; Philo & Wilbert, 2005). Movement and mobility of non-human species is therefore a significant aspect in the perceptions of being *in* or *out-of-place* (Hodgetts & Lorimer, 2020; Ojalammi & Blomley, 2015).

As Philo and Wilbert (2005) argue, non-humans, through their agency, can transgress and contest these "human placements" and "in so doing the animals begin to forge their own 'other spaces', countering the proper places stipulated for them by humans, thus creating their own 'beastly places' reflective of their own 'beastly' ways, ends, doings, joys, and sufferings" (p. 13). Non-human species are thus starting to co-create the (human) spaces that they enter, and subsequently how we humans govern these spaces. Ojalammi and Blomley (2015) note this too: "humans' spatial practices and other species' spatial practices entangle with each other in complex and precarious ways" (p. 56). Oftentimes these *beastly places* occur where overlap between "natural" and "cultural" landscapes is greatest, and where humans attempt to mediate between biosecurity and biodiversity (Ojalammi & Blomley, 2015). In other words, as König et al. (2020) emphasized, agricultural, or multiuse landscapes.

Sharing a landscape with non-human species is not per definition problematic. Drenthen (2020) states for example, that most people are not necessarily against wolves, as long as they stay in their proper places. Ojalammi and Blomley (2015) state it well: "It is not the existence of the wolf that is deemed problematic, in other words, but its relative location" (p. 55). Doubleday (2018) illustrates this in her case study about human-tiger relations in Sariska Tiger Reserve, India, where tigers have gone extinct three years (but in some places more than a decade) before the deliberate reintroduction of new tigers. Local inhabitants experienced significantly more conflict with the new tigers compared to the original tigers. Doubleday (2018) found that according to the local people, the new tigers lacked "place-knowledge" and were seen "as disturbers of the interspecies boundaries created by the interactions of Sariska's original tigers and many generations of local people" (p. 1). According to Doubleday (2018), the original tigers "were understood as co-creators of an agreed upon landscape with combined human-only, tiger-only, and human-tiger areas" (p. 13). Doubleday's study illustrates that local people could peacefully coexist with tigers that co-adapted with humans in a shared landscape, and therefore both people and tigers stayed in their proper places. The new tigers, however, as having different "individual and collective spatial personalities" (thus, intraspecies differences) did not know these mutual understandings, and were therefore often transgressing into human landscapes, and thus perceived as being *out-of-place* (Doubleday, 2018, p. 10).

Whether through communication via fences, or mutual understandings between generations of people and wildlife, coexisting in a shared and multispecies landscape is possible. It shows that this partly depends on interspecies communications, agreements, and expectations. Drenthen (2020) argues, however, that because non-human species, such as wolves, have agency and because we can make certain agreements with them through co-adaption (learning, communication, etc.), it can also be justifiable to intervene when non-human species do not adhere to the boundaries and agreements that we attempt to communicate. He explains that when a wolf repeatedly finds itself *out-of-place* in a meadow predating on sheep, it might be justified to intervene (Drenthen, 2020). Species that are *out-of-place*, Doubleday (2018) argues, reinforce imaginings such as "problem species/animals" (p. 3). Moreover, Gibbs (2021) states that "animals become killable when deemed 'out of place'" (p. 373). Which animals become killable however, is decided through biopolitics.

Biopolitics: The governance of caring and killing

Multispecies landscapes are governed through biopolitical processes and decisions. As Braverman (2018), Lorimer et al. (2019), Margulies (2019), and Ojalammi and Blomley (2015) note, in this process non-human lives are regulated and manipulated, both at the level of the individual animal, the population, and entire ecosystems. Biopower (the authority to decide over life and death, caring and killing), which is at the core of biopolitics, is the ability "to make live and make die", whereas humans can both determine where non-human species can (i.e. through reintroductions) and cannot live (i.e. through lethal management or fences) (Ojalammi & Blomley, 2015, p. 53). Biopolitics is therefore not only about life and death, in their most literal meaning, but also about governing animals' movements and mobilities throughout the landscape and therefore governing and managing the landscape itself (Hodgetts & Lorimer, 2020). In essence, most multispecies biopolitical decisions relate to the tension between biosecurity (i.e. protection of sheep) and biodiversity (i.e. protection of wolves), and are therefore an expression of human-human, human-animal and animal-animal relations (Gibbs, 2021; Hovorka, 2019).

Conflicts over biopolitical decisions often arise because the authority – or monopoly – to make biopolitical decisions lies with governments, and is subsequently regulated by laws and institutions (Ojalammi & Blomley, 2015; Vaccaro & Beltran, 2009). The outcome of biopolitics is determined by the knowledge, and importantly the type of knowledge, that is taken into consideration when making these decisions (Dorresteijn, 2016; Toncheva & Fletcher, 2021). Toncheva and Fletcher (2021) discuss this question in relation to the inclusion of bears' perspectives in policymaking, and note that there are significant differences between scientific knowledge and local knowledge concerning bear behaviour and subsequently concerning perceived appropriate governance. In extension, Braverman (2018) argues that biopolitics and whose knowledge and valuation is included, goes past exclusively ecological or biological considerations, and includes valuations of practices, cultures, and communities too. According to Drenthen (2020) and Ojalammi and Blomley (2015) for example, sheep farmers feel that their way of living is threatened because of the biopolitical choice of protecting wolves. In this case, they feel that the government has decided to care for wolves, and perceived this as "a lack of respect from the state (usually in favour of large carnivores) toward the farmer's work and property" (Ojalammi & Blomley, 2015, p. 55).

As mentioned earlier, non-human species become killable when perceived *out-of-place*. However, this biopower is not equally divided. Concerning the threat of large carnivores, there is often a discrepancy between when farmers find it justifiable to kill and when the state (i.e. law) finds it justifiable (Ojalammi & Blomley, 2015). To legally kill an animal, especially with strict species protection laws, many requirements have to be met. Margulies (2019) illustrates this with the case of a man-eating tiger who could not be declared a man-eater (and thus "problematic") since it "only" killed and ate one person. For the tiger to be declared a man-eater and therefore become legally killable, it was necessary to wait until it killed a person again. Here, as Margulies (2019) notes, bureaucracy came between the killing of a tiger that was considered a problem animal by practically anyone but the law itself. Ojalammi and Blomley (2015) further note that this occurs with wolves as well, where the state has to get involved "as a biopolitical referee" (p. 58) and incentivize sheep farmers to implement electric fences, so that sheep are protected, and wolves do not have to be killed.

Biopolitics, the governance of caring and killing, is a significant aspect in how humans perceive coexisting with wildlife in shared landscapes, since negative opinions on wildlife management and "the feeling of being treated unfairly have the potential to erode the built-up tolerance" towards wildlife (Dorresteijn, 2016, p. 497).

2.3 - Conceptual framework: A multispecies approach to human-wildlife coexistence

From the literature review, the following conceptualisation of multispeciesism in relation to human-wildlife governance has been developed (Figure 2). The main aspects of multispeciesism are positioned in the full circles and include: valuation and agency of non-human species; multispecies landscape; and biopolitics. On the positions where two circles overlap the specific practical or conceptual outcomes are shown. These are: non-human species *in* or *out-of-place*; organisation of the landscape; and caring for or killing of non-human species. How the concept of multispeciesism relates to perceptions and experiences of human-wildlife coexistence can be found where all three circles overlap, and is still unknown as it is part of this research's aim and main research question.

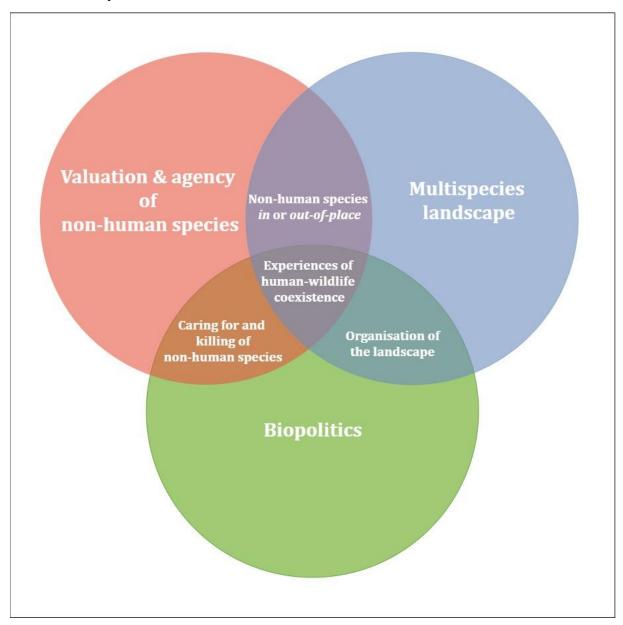


Figure 2 Conceptual framework (Author's own).

3 - Legal framework for wolves and sheep

Wolves are legally protected in the European Union and subsequently in the Netherlands. At the EU scale, the most important legal framework is the EU Habitats Directive (Trouwborst, 2010; 2018). The Dutch law is required to be implemented consistently with the EU Habitats Directive. Therefore, the Dutch conservation law *Wet Natuurbescherming*, must be in line with the EU Habitats Directive. Wolves are therefore strictly protected by both laws. These nature conservation laws are primarily based on the idea that wild animals hold passive rights, meaning that infringements into their autonomy must be minimized.

In contrast, domestic animals such as sheep are protected based on the active rights they enjoy. The Dutch animals' rights law *Wet Dieren* therefore focuses on the protection of kept animals such as livestock.

As this is not a legal study, this section will not go in-depth into these legal frameworks. Table 3 below briefly presents some of the relevant elements of these three laws in relation to wolf protection in the EU and the Netherlands and the obligations sheep farmers have towards their sheep.

Table 3 Overview of relevant legal documents in the EU and the Netherlands.

Law	Article	Content	Notes
EU Habitats Directive (1992)	12.1	"Member states shall take the requisite measures to establish a system of strict protection for the animal species listed in Annex IV in their natural range, prohibiting: (a) all forms of deliberate capture or killing of specimens of these species in the wild; (b) deliberate disturbance of these species, particularly during the period of breeding, rearing, hibernation and migration; (c) []; (d) deterioration or destruction of breeding sites or resting places." (Council Directive 92/43/EEC, 1992, p. 6)	Wolves are listed in Annex IV
	16.1	"Provided that there is no satisfactory alternative and the derogation is not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their natural range, Member States may derogate from the provisions of Articles 12 [] (b) to prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property" (Council Directive 92/43/EEC, 1992, p. 7)	To prevent serious damage to livestock it can be allowed to lethally manage wolves in the Netherlands, nonetheless, stringent requirements have to be met
Wet Natuur- bescherming (2017)	6.1	Article 6.1 states that the provinces are obligated to pay damage compensation to sheep farmers in the case of damage induced by wild animals listed in Annex IV of the EU Habitats Directive. Important requirement is that the damage could not reasonably be prevented by the sheep farmer	-
Wet Dieren (2014)	1.6	Sheep farmers are obligated by law to protect its sheep against predators (e.g. wolves)	

4 - Methodology

4.1 - Study area

This research was conducted in the Netherlands between March 16th and August 8th. The study area consisted of the Dutch provinces of Drenthe, Gelderland, Noord-Brabant, and Limburg (Figure 3). These four provinces were chosen because these are the only provinces in the Netherlands where wolves are (in the case of Drenthe, were) settled. Consequently, all these provinces have implemented wolf related policy schemes, such as subsidies, damage compensation, and emergency schemes for roaming wolves. These factors make abovementioned provinces interesting and relevant study areas for this case study.



Figure 3 Study area (Adapted from http://www.ontdekdeprovincie.nl/ on 06-08-2021).

4.2 - Research participants: Sheep farmers

Sheep farmers were contacted through the sharing of a participation request in multiple Facebook groups. To safeguard a diverse set of sheep farmers, the research participation request was shared in anti-wolf groups, pro-wolf groups, and groups that focused on sheep farming in general, without a special focus on wolves (can be considered as neutral-wolf groups). Due to relatively

low response, and difficulties in communication, sheep farmers were not necessarily "selected." Nonetheless, through the snowball-effect two sheep farmers were actively contacted and asked to participate in this research, because they had experience with wolf-aversive fencing. This enhanced the diversity between sheep farmers and contributed to a better understanding of working with wolf-aversive fences.

All participating sheep farmers were further informed about their privacy, anonymity, and the content of this research via a research information form, and were asked whether they agreed with it. This was done via online communications, such as email or WhatsApp.

Despite the low response, the group of eight sheep farmers included in this research are highly diverse in their practices, objectives, and location. Table 4 shows the sheep farmers that participated in this research. In this research small-scale sheep farmers are defined as having 1-100 sheep; large-scale 101-up.

Table 4 Visited and interviewed sheep farmers.

#	Name	Gender		Province	Farm type	# of sheep
1	NM	Female		Gelderland	Hobby	~12
2	PF	Male		Gelderland	Hobby; small- scale landscape management	~15
3	TC & SC	Male Female	&	Limburg	Sheep dog training	~27
4	SB	Female		Drenthe	Dairy	~43
5	JM	Male		Gelderland	Hobby; breeding; small-scale landscape management	~55
6	AB	Male		Drenthe	Lamb meat production; breeding	~300
7	ВК	Male		Limburg	Lamb meat production; breeding	~800
8	BE	Male		Noord- Brabant	Landscape management	~1200

4.3 - Research participants: Provincial government officials

The goal was to interview at least one government official from each province to gain a better understanding of the legal and political context of the sheep farmer-wolf-sheep context in the Netherlands, and to be able to highlight the perspective of the provincial government compared to that of sheep farmers. Ultimately, three provincial government officials (PGOs) were interviewed (Table 5). No government official was interviewed from Drenthe, due to communication difficulties in the final part of the research period. The provincial government officials were selected and contacted based on their involvement with wolf-related topics in their respective provinces.

Table 5 Interviewed provincial government officials (PGOs).

#	Province	Code	Function		
1	Gelderland	PGO Gelderland	Secretary of wolf-commission Gelderland		
		Gelderland	Member of national wolf-commission Vitaal Platteland – Theme Nature – Nature and fauna management Province Gelderland		
2	Limburg	PGO Limburg	Member national wolf-commission		
			Senior species-policy Province Limburg		
3	Noord-Brabant	PGO Brabant	Consultant nature conservation and fauna Province		
			Noord-Brabant		
			Adviescommissie preventie wolvenschade Noord-		
			Brabant (Advice commission prevention wolf-damage		
			Noord-Brabant)		

4.4 - BIJ12

BIJ12 is part of the Interprovincial Overleg (IPO), and is an executive organisation for the twelve Dutch provinces. BIJ12 supports the provinces in the execution of legal tasks, knowledge and information sharing, and with scientific data concerning the rural and natural landscape (BIJ12, n.d.). During this research the researcher communicated with the unit "Fauna" of BIJ12 which focuses primarily on damages induced by wild animals, ranging from geese, to wild boar, to wolves.

BIJ12 (and in extent the IPO, a governmental organisation that advices the Dutch provinces on multiple topics) was interested in the research findings and was therefore willing to assist with getting in touch with sheep farmers and government officials, with the request that the findings would be shared with them. Furthermore, the people from BIJ12 were willing to answer questions or suggest some interesting people to potentially talk to, especially considering the political and legal context of this study. Ultimately, the "collaboration" was not very intensive or consistent, meaning that this study was conducted independent. Nonetheless, they helped with building a network by giving the opportunity to present this research's proposal and progress in two online wolf-commission meetings, which was an interesting experience and helped with getting in touch with the interviewed government officials, since most of them were already aware of this research.

4.5 - Data collection

This research combined field visits and in-depth semi-structured interviews to explore and gain insights into sheep farmers' perceptions, experiences (and practices). Furthermore, to explore the provinces' perspectives on coexisting with wolves in the Netherlands, interviews were conducted with provincial government officials. Finally, literature and policy review was conducted to gain understandings of the (political) context. An inductive approach was taking to gain new insights into sheep farmers' emic perceptions and experiences, rather than a deductive approach to test a specific theory (Dorresteijn et al., 2016).

4.5.1 - Field visits & participatory observation

Eight field visits were conducted, one at each sheep farmer. During these field visits the aim was to gain insights into sheep farmers' practices, their relationship with their sheep, and to assist sheep farmers in their daily routines to better understand their (emic) perspectives and the challenges they experience. The field visits generally lasted a day or part of the day. Commonly, we would meet and first get to know each other a little bit to get comfortable through small talk and a cup of coffee.

Furthermore, participatory observation was used during the field visits to collect data. During these field visits one of the main activities (next to the semi-structured qualitative interview) was showing me around on the farm and showing me the meadows where the sheep were grazing. During these tours a lot of data was gathered, because sheep farmers were encouraged to talk about particular topics or themes due to the places that we visited, such as particular meadows or nature reserves where we drove through.

Additionally, I assisted sheep farmers with setting up meadows (both with 90cm and 120cm fences) (Figure 4), transferring sheep between multiple meadows (Figure 5), observed sheep farmers during the training of their sheep dog (Figure 6), and observed them in direct their interactions with their sheep.

During participatory observation notes were written down continuously and when possible pictures were made. Notes were processed into visit reports, consisting of my experiences, thoughts, findings, and contextual descriptions.



Figure 4 A sheep farmer and me set out a meadow with 90cm flex-nets (Author's own).



Figure 5 A sheep farmer and me move sheep from one meadow to another (Author's own).



Figure 6 Sheep dog training (Author's own).

4.5.2 - Qualitative semi-structured interviews

11 qualitative semi-structured interviews were conducted with both sheep farmers (8 interviews) and provincial government officials (3 interviews). Since these were semi-structured, all interviews differed to some extent.

Sheep farmers

Qualitative semi-structured interviews were conducted with sheep farmers to gain an in-depth understanding of their perceptions of coexisting with wolves. Since the interviews were semi-structured, sheep farmers could raise themes that were not included in the interview guide or theoretical framework. Often, the interviews were conducted after the sheep farmer showed the farm, meadows, and sheep (and occasionally other places, such as nature reserves), meaning it was possible to integrate observations and experiences from before into the interview. Consequently, it was possible to ask more specific questions and relate the questions from the interview guide to specific practices, meadows, and observations from during the field visit, resulting in more personal interviews for each sheep farmer. The interview guide for sheep farmers (Appendix 1) was based on the concept of human-wildlife coexistence. A brief overview of the operationalisation of human-wildlife coexistence to the wolf context can be seen in Table 6. Note, that the interview guide changed to some extent during the process. For example because some questions were not relevant, and new questions developed following from prior interviews.

Table 6 Operationalisation to wolf context of the concept of human-wildlife coexistence.

Aspect of human-wildlife coexistence	Operationalisation	Interview questions
Shared landscape	Presence of wolves	Perceptions of wolves
		Perceptions of the landscape
		Perceptions of wolf in the landscape
Tolerance (to risks)	Threat of sheep	Experiences of sheep depredation
	depredation	Perceived causes and threat
		(In)tolerance to sheep depredation
(Co-)adaptation	(Co-)adaptation	Duty of care
		Responsibility to protect sheep
		Habit
		Willingness and ability to adapt
Governance & management	Governance &	Preventive measures
	management	Designated wolf territories
		Governmental support
		Damage compensation & subsidies
		Knowledge on wolves

Provincial government officials

After all field visits and sheep farmer interviews were finished, semi-structured interviews were conducted with provincial government officials. These interviews had two objectives. First, to gain a better understanding of the provincial legal and governmental contexts and processes. Second, to explore provincial government officials' perspectives on specific perceptions and experiences of sheep farmers. The objective was to find differences and/or similarities. The interview guide for these interviews can be found in Appendix 2.

4.6 - Data processing

All interviews were transcribed in Word and analysed using the data analysis software Nvivo. All coding was primarily done inductive because this study set out to explore sheep farmers' emic perceptions and experiences. Consequently, codes were based on the statements of participants themselves, instead of predetermined based on the concepts and theories. These inductive codes were categorized into larger categorical codes based on the sub-questions of this study. This helped in analysing the data and in structuring the results chapter of this thesis. Transcripts are not included, but can be requested from the author if deemed necessary.

4.7 - Research framework

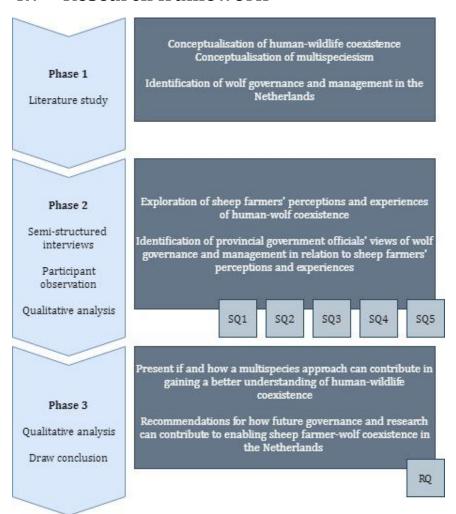


Figure 7 Research framework (Author's own).

4.8 - Reflection on positionality

The findings of this study will reflect the subjective interpretations of both the researcher and participants (Hennink et al., 2011). Therefore, since the "wolf debate" is a heated one, I want to briefly state my own positionality as a researcher and as a person within this topic. First, I would consider myself to be in the pro-wolf group (insofar it is possible to make clear distinctions

between "pro" and "anti"). I am of opinion that we (humans) may not decide for wild animals where they can and cannot live (at least in most cases), and I am a proponent of animal rights, nature conservation, and of the idea that both humans and non-humans have an equal right to have meaningful lives on this planet. Nonetheless, I also firmly believe that to realize a world in which humans and non-humans can coexist together, it is crucial to include the perceptions and experiences of the human stakeholders whom it concerns the most, which in this study are sheep farmers. My positionality still comes with certain biases however. While I am certainly not afraid to explore and emphasize the challenges of living with wolves, this study has a certain point of view, which is to gain an understanding in how to enable coexisting with wolves, which can be conflicting with people who simply do not accept the wolf in the Netherlands. Fortunately, most sheep farmers shared this view and were also oriented towards solutions, despite the many challenges some of them experienced.

Nonetheless, one sheep farmer had significantly different ideas on coexisting with wolves than me. Which was difficult at times during the visit. One time for example, despite the fact that I explained that regardless of my own opinions I was honestly interested to hear his story, he thought I was asking steering questions (towards "pro-wolf"). Other times I struggled with the answers he gave and how to respond to them. Despite these difficulties it was a very interesting visit, with valuable insights and personal stories as a result.

4.9 - Limitations

This research has a couple of limitations. First, since this study is based on subjective interpretations, a small research population, and local perceptions, experiences, and realities, the findings of this study are not generalisable. Nonetheless, as the participating sheep farmers are highly diverse, many different and unique perspectives were found, increasing the chances that other sheep farmers in the Netherlands perceive and experience coexisting with wolves similarly to some extent.

Second, the study is based on eight field visits, instead of a longitudinal fieldwork period. This means that participatory observation is based on a limited amount of visits, compared to for example a long-term stay at the same location as the research participants. Preferably, fieldwork would encompass working with a sheep farmer for a longer time period, however partly due to the COVID-19 situation at the time of this research this was not deemed practical, or desirable. Despite the lack of a long-term fieldwork period and therefore a more in-depth understanding of the emic perspectives of sheep farmers, these eight field visits, including the interviews were found valuable and contributed to many interesting insights.

Third, and related to the field visits, were the time consuming trips to and from the sheep farmer visits. As I was dependent on public transport and sheep farmers lived across all corners of the country, most field visits took between two and three and a half hour to travel from home to the sheep farmer, there adding up to 4 to 7 hours of traveling in total on the day of a field visit.

Finally, all data was collected in Dutch which means that there is a risk of data being lost in translation. However, since the researcher is a native Dutch speaker and a long-term English speaker, this potential limitation is minimized to some extent.

5 - Results

This chapter will answer the five sub-questions of this research. The following content will be presented: 1) sheep farmers' perceptions and experiences of the presence of wolves; 2) sheep farmers' perceptions and experiences of sheep depredation; 3) sheep farmers' perceptions and experiences of (co-)adaptation; 4) sheep farmers' perceptions and experiences of wolf governance and management; and finally 5) provincial government officials' views in relation to the perceptions and experiences of sheep farmers.

5.1 - Presence of wolves in the Netherlands

5.1.1 - Wolves as intruders in a cultural landscape

Three (two large- and one small-scale) out of eight sheep farmers in the study area considered that wolves do not belong in the Netherlands. This unbelonging of wolves strongly related to the idea that the Netherlands are a cultural landscape and that culture and nature should and can be strictly separated. AB – a meat producing sheep farmer from Drenthe – argued that after an absence of approximately 150 years, wolves do no longer belong in the Dutch landscape, due to the increased human population, the intensification of agriculture, and the subsequent increase of cultural landscapes at the expense of natural ones. BK – a sheep farmer from Limburg that keeps his sheep for meat production as well – argued that the wolf does not belong in the Netherlands because it is an agricultural plague and:

This [the Netherlands] is a cultural landscape, therefore we should not have to suffer from plagues from the natural world. – BK, Limburg

It illustrates a desire to control nature to a certain extent. BK additionally argued that because the Netherlands is a highly fertile delta, food production (i.e. cultural landscapes) should be prioritized over biodiversity (i.e. natural landscapes) and therefore it is paramount that nature and culture are strictly separated:

Culture here, nature there! - BK, Limburg

It is noteworthy however, that while making this strict dichotomy between nature and culture, BK simultaneously argued that sheep farming is a collaboration with nature and that his sheep are one of the many species that live in the landscape and thus contribute to and are a part of biodiversity. It illustrates the difficulty in conceptually and geographically separating natural and cultural landscapes, even when sheep farmers express this strict separation. BK continued by arguing that the Dutch landscape will change critically if the presence of wolves and their claim on the landscape will persist or even increase:

People like seeing sheep in the landscape. With the presence of wolves, this sighting will disappear. – BK, Limburg

It illustrates sheep farmers' concerns about the presence of wolves in a cultural landscape, namely that wolves threaten the contemporary rural landscapes of the Netherlands. Wolves are therefore not just another species in the landscape, but a species that has the ability to remake the spaces it inhabits.

JM – a very passionate "got-out-of-hand" hobby sheep farmer and breeder from Gelderland – argued something similar while he showed me the small nature reserve annex estate in which he

manages the landscape through grazing. He mentioned that the landowners desire four different landscape-types surrounding the estate, and argued that if those fields constitute nature in the Netherlands – referring to the small size and the intensity of management – than there is no nature in the Netherlands at all. JM emphasized that the Netherlands are no suitable habitat for wolves due to the fact that natural areas are small-scale and scattered throughout what is mainly a cultural landscape.

5.1.2 - Wolves as a last sign of nature in a cultural landscape

Despite some sheep farmers perceiving the Netherlands to be unsuitable for wolves, most of the sheep farmers perceived wolves as belonging in the Netherlands. The idea that wolves are an inherent part of nature, and have their own agency and agenda were important factors. Consequently, and contradictory to the sheep farmers described above, these sheep farmers all described a willingness to share the landscape with that what nature presents them, and acknowledged that nature, and wolves as expressions of nature, have their own agency.

Whereas sheep farmers that perceived wolves as being *unbelonging* to the Netherlands expressed a desire to control the landscape and more or less strictly separate cultural from natural landscapes, sheep farmers that argued that wolves belong in the Netherlands expressed the opposite. In relation to wolves having agency, they mentioned that nature is not to be controlled and wolves can determine for themselves which areas are suitable or not. Whether humans find it desirable that a particular wolf is in a certain area, is another discussion according to these sheep farmers.

While these sheep farmers accepted the presence of wolves and perceived wolves to belong in the Netherlands, because it is a part of nature, they still see the Netherlands as a primarily cultural landscape:

We don't have nature in the Netherlands. It is all cultural landscape. If you're looking at the robustness of the natural areas, then maybe the Veluwe is somewhat robust. – BE, Noord-Brabant

Moreover, most sheep farmers emphasized that the natural landscapes that are left in the Netherlands are intensively managed and are not truly natural anymore due to the many interventions in nature. One sheep farmer even related it to his own landscape management sheep farm:

Look, "true" nature... what we [his sheep farm] do – and we then call it "landscape management" or "nature management" – is essentially gardening. However, if you are not gardening, then the heather fields will turn into forest and you'll lose biodiversity. So it is still important to garden in the landscape. – BE, Noord-Brabant

BE continued and told me about a nature reserve that was planning to fence the entire nature reserve to protect the cattle that are naturally grazing the area there from wolves:

So we are denying wolves access to nature reserves? That is really strange if you think about it. – BE, Noord-Brabant

It illustrates the urge to intensively manage nature in the Netherlands, by even denying that which can be considered a symbol of nature, namely the wolf, access to a nature reserve, so that (domestic) cattle within the nature reserve are protected. It is an almost perfect example of the

intertwinement of natural and cultural landscapes in the Netherlands, and the management thereof.

In relation to the lack of nature and the intertwinement between natural and cultural landscapes, half of all sheep farmers mentioned that the presence of wolves in the Netherlands indicated that the landscape preserves or regains some of its natural characteristics:

I think that it [nature] will just disappear. And that what is still left, can barely be called 'nature.' So it [natural areas] is very limited for a wolf as well. But in my view, he [the wolf] can come, and he can stay too. Because that would mean that here and there some bushes will be preserved. – TC, Limburg

In this sense, the sheep farmers that perceived wolves as belonging to the Netherlands, see wolves as symbols of nature and as intertwined with the state of nature in the Netherlands.

5.2 - Sheep depredation

This section will present how sheep farmers perceive and experience the multiple aspects surrounding sheep depredation. The following aspects will be discussed here: 1) experiences with sheep depredation; 2) perceived causes and threat of sheep depredation; and 3) (in)tolerance for sheep depredation.

5.2.1 - Experiences of sheep depredation

Two sheep farmers in the study area have experienced sheep depredation by wolves. BK – a large-scale meat producing sheep farmer – experienced sheep depredation three times. In the most recent attack, eight lambs were killed. While BK and I drove past some of his meadows, he stated:

I was furious because there is no way to get it [sheep depredation] under control. – BK, Limburg

It was clear that BK was still emotional about these attacks, and his statement undoubtedly showed the desperation that he felt about the threat of sheep depredation.

The second participant that experienced sheep depredation is NM. BIJ12 did not officially label the attacker as a wolf due to the lack of proper DNA-samples and the fact that they found dog hair at the scene. NM, however, has no doubt that a wolf was the animal that attacked her sheep, due to varying reasons. When asked how NM felt after the attack, she stated that:

It's that you want to protect your animals, and that that failed. That doesn't feel right, that is bothering me. That is still bothering me. – NM, Gelderland

Both BK and NM were clearly still affected by the attacks on their sheep, making it clear that cases of sheep depredation are very impactful to sheep farmers, both in the short- and long-term.

5.2.2 - Perceived causes and the threat of sheep depredation

Despite the fact that most sheep farmers did not experience sheep depredation first hand, they all felt the threat of sheep depredation. The most important factor for why they felt threatened was related to the unpredictability of wolves, and specifically of roaming wolves. Sheep farmers that did not live in or near wolf territories were especially worried about unpredictable, roaming wolves, emphasizing that sheep depredation in non-wolf territories is challenging to control. The fact that roaming wolves are highly mobile and can cover large distances and can therefore strike unexpectedly appeared to be an important perceived cause and factor for feeling threatened:

You don't know when the wolf comes... - BK, Limburg

It illustrates that sheep farmers are concerned about the elusiveness of roaming wolves. Additionally, roaming wolves were even often described as problematic wolves in advance, and were expected to cause problems, with some sheep farmers mentioning that all roaming wolves will eventually predate sheep:

But if they are roaming around, every wolf is a potential sheep catcher, because sheep is simply on their menu. [...] And roaming wolves, I don't know what to do about those... in any case they will cause problems eventually. – TC, Limburg

Besides describing roaming wolves as problematic, this statement also illustrates the concerns of sheep farmers about dealing with sheep depredation and roaming wolves. Preparing for sheep depredation was found difficult by sheep farmers. BE – who temporarily worked with wolfaversive nets in the past due to a roaming wolf in the area – expressed his worry:

Every day I am thinking 'how to solve this [sheep depredation] problem?' For a very long time I was occupied with the thought 'if that wolf suddenly appears here, I won't have a solution.' – BE, Noord-Brabant

The distinction between roaming and settled wolves became increasingly apparent due to sheep farmers expressing relatively little concerns about settled wolves. They expected settled wolves to hunt wild prey and stay in their natural habitats:

And if you look at the wolves at the Veluwe, we don't hear much about them. They are very well-behaved wolves. They hunt wildlife: red deer, roe deer. And they take very few sheep. Well, we can very easily coexist with them. – BE, Noord-Brabant

Moreover, the threat of sheep depredation came not only from wolves themselves, but also from the nature of contemporary sheep farming. One sheep farmer, for example, emphasized that because his sheep are out of sight most of the time, he was more worried. Most sheep farmers in fact, do not have their sheep in direct eye-sight, because their sheep are often dispersed over multiple meadows throughout the landscape that are owned by different landowners. Sheep farmers experienced this as making the threat of sheep depredation even more elusive and uncontrollable. For this reason, one small-scale sheep farmer keeps her sheep on the meadow next to her house more often, so that she can watch more closely what happens in her meadow.

Other factors related to sheep farming were the fact that most sheep have lost their flight-instinct, and are essentially caged within their meadows. These factors were seen as important causes of sheep depredation and surplus killing:

Sometimes people say to me 'that wolf is crazy, because it killed 20 sheep in one attack.' Then I respond with 'no, that wolf is not crazy, it is expressing natural behaviour, because those sheep stay near it. *Our* sheep are not raised natural, staying near it and thus triggering it [the wolf]. – BE, Noord-Brabant

5.2.3 - (In)tolerance for sheep depredation

The four smallest-scale sheep farmers (most of which are hobby farmers or do not entirely depend on their sheep for their main income) and the large-scale landscape management sheep farmer all expressed a form of tolerance for sheep depredation. The most significant reason for tolerance was the acknowledgement that wolves are behaving naturally, and that in contrast, sheep are behaving unnatural, referring to their lack of flight-instinct that triggers the wolf's hunting-instincts. Tolerance due to natural behaviour was highly related to the ideas that wolves are guided by their instincts, hunting is a necessity for survival, and that killing is a part of nature:

That it [the wolf] is here and that it is also in search of food, that's only logical I think. And that can be a sheep as well, or a lamb... and it's unfortunate when it's your sheep, but I do think that is nature. – SC, Limburg

Multiple sheep farmers compared sheep depredation by wolves to depredation on their poultry by for example buzzards or peregrine falcons, and emphasized that they tolerate these forms of depredation because it is part of nature. Subsequently, they argued that it would be unfounded to not tolerate sheep depredation by wolves. One sheep farmer clearly emphasized his confusion about labelling wolves that predate on sheep:

And if you look at roe deer, it [a wolf] catches those too. We call that nature. And when it catches a sheep, then we call it a murderer... - TC, Limburg

In contrast, the two meat producing sheep farmers and the relatively serious hobby breeder expressed a more intolerant attitude towards sheep depredation by wolves. Moreover, they stated that they are more tolerant for sheep depredation by dogs since in these cases the dog's owner can be held responsible and accountable, suggesting that the fact that no one can be held accountable when a wolf predates on sheep increases their intolerance for sheep depredation by wolves.

5.3 - (Co-)adapting to the presence of wolves and sheep depredation

In a landscape shared by people, sheep, and wolves, and in which the threat of sheep depredation is ever present, (co-)adaptation might be a crucial step towards coexistence. This section will first present sheep farmers' duty of care towards their sheep and will then present the challenges sheep farmers experience considering habit, knowledge and effectiveness of adaptation.

5.3.1 - Willingness to adapt: Sheep farmers' duty of care

Taking care of kept animals and protecting them from external threats is dictated by law (Wet Dieren, 2014). Sheep farmers, however, are not just *taking care of* their sheep, they go further and *care for* their sheep. This is one of the most crucial reasons for why all sheep farmers expressed some form of willingness to adapt to the novel presence of wolves. All sheep farmers I visited felt an inherent duty of care and a sense of responsibility to protect their animals from threats. They emphasized that with keeping animals, and specifically domesticated animals, comes the duty to care for them and protect them, because they are fully dependent on the sheep farmer. Moreover, since sheep are essentially helpless against wolves in their meadows, this brings additional responsibility:

If there are not four walls around it [the meadow], its open for wolves... and my sheep cannot escape. They are in between four small fences... so... shit! I am responsible! – SB, Drenthe

Whether it is because they care for each individual sheep on an emotional level or because they "simply" require healthy sheep to do the work, no sheep farmer wants to see his or her sheep hurting or suffering. Small- or large-scale, every sheep farmer checks on its sheep (almost) every day to see if everything is fine.

All sheep farmers attempt to adapt to, and protect their animals from all sorts of external threats. NM – who transfers here sheep back and forth between her home (with night corral, see Figure 8) and the meadow every day to protect her sheep from wolves – illustrated that this duty and responsibility to care does not stop when it requires more time and labour:

Other people would say I am crazy. [...] It requires more work, but I would not discard them for this reason. I don't see it as a duty. Well, yes... a duty of care. – NM, Gelderland

Five sheep farmers emphasized that wolves are merely another threat to which they need to adapt to protect their sheep. It illustrates the difficulties that sheep farmers experience considering reconciling their duty of care for their sheep and adapting to wolves to protect their sheep in practice. For most, however, these challenges did not diminish their willingness, but influenced their ability to adapt.



Figure 8 NM's night corral on the right, including her meadow and sheep in the back (Author's own).

5.3.2 - Ability to adapt: Habit, experience and knowledge

Habit, experience and knowledge concerning the adaptation to wolves were some of the most significant factors influencing sheep farmers' willingness and ability to adapt to wolves. Most sheep farmers, even those who (temporarily) implemented preventive measures, are uncertain about how to adapt to and coexist with wolves:

I am not against the wolf, I want to learn to coexist with the wolf, but I simply don't really know how yet. – BE, Noord-Brabant

One sheep farmer emphasized that knowledge on how to coexist with wolves has disappeared alongside the disappearance of wolves approximately 150 years ago:

I don't have any experience with it [adapting to wolves], and there is not much knowledge left from our ancestors who lived with wolves. So that makes it a search and worrisome as well. – SB, Drenthe

The loss of habit relates to questions about what types of preventive measures to take (i.e. night corrals, fixed fences, flexible nets, guarding dogs, or other (in)visible deterrents), and subsequently where to gain knowledge and information concerning the details of implementing these measures, think for example of: what types of fence-poles are required? Can a section of the fence be a shed or is it necessary to built the fence around the shed? And are guard dogs safe enough for people and other dogs? NM for example, was highly dependent on the expertise of Wolf Fencing – a volunteering organisation that assists sheep farmers in implementing wolf-aversive

fences – for the purchase and implementation of her preventive measures. It illustrates that knowledge is available, however, in this case it had to come from a volunteering organisation.

Pilot projects, often initiated by sheep farmers themselves, but with the support of governments, appeared to be important for some sheep farmers for implementing preventive measures. PF for example gained a lot of information when visiting a pilot project where wolf-aversive fences were implemented. SB, visited another sheep farmer who used guard dogs to protect its sheep from wolves, which made SB decide that she will implement guard dogs as well in the near future.

5.3.3 - Willingness to adapt: Effectiveness of available measures

Next to a lack of knowledge and uncertainties concerning how to prevent sheep depredation, almost all sheep farmers questioned the effectiveness of the preventive measures currently available. They emphasized the ambiguity surrounding which measures are and are not effective and stated that they feel that organisations such as BIJ12 are not sure either. Sheep farmers were most uncertain about the effectiveness of the 120cm electric fixed fences and flex-nets, which are proposed by BIJ12 as effective measures. One sheep farmer explained his concerns:

This beast [wolf] will not be stopped easily by a fence. A wolf can learn a lot. – BK, Limburg

During this research, Noord-Brabant's and Limburg's settled wolf attacked and killed multiple protected sheep, showing exactly that what BK fears. An additional uncertainty is that nobody currently knows how this wolf gets in and out of protected meadows, therefore not knowing what shortages these measures have. While experts emphasize that all preventive measures are wolf-aversive and not wolf-proof, it appeared that many sheep farmers are reluctant to adapt to wolves by taking preventive measures of which they are unsure that it will fully prevent any wolf in accessing their meadows. They rather wait until the threat of sheep depredation becomes unmanageable and they see no other option but to implement preventive measures or wait until a preventive measure is developed that is wolf-proof and can fully separate their (domestic) sheep from (wild) wolves.

It illustrates sheep farmers' scepticism in the current knowledge of organisations, such as BIJ12 and the government, concerning the adaptation to wolves. Therefore, it is not only a lack of habit and knowledge of sheep farmers themselves that is causing a diminishing willingness to adapt to wolves, but also a perceived lack of habit and knowledge of governmental organisations.

5.4 - Wolf governance and management in the Netherlands

This sub-chapter will discuss how sheep farmers perceive and experience wolf governance and management in the Netherlands. This section will discuss the following aspects: 1) sheep farmers' perceptions of and experiences with the proposed preventive measures; 2) sheep farmers' perceptions of wolf management; and 3) sheep farmers' perceptions of government support in the form of damage compensation.

5.4.1 - Preventive measures

Sheep farmers in the study area all have different (and often multiple) objectives and practices regarding their sheep farms. It is therefore challenging to find preventive measures that work for all. Nevertheless, most sheep farmers experienced similar challenges as well, such as the difficulty of protecting your sheep throughout the landscape and in dynamic meadows, and the tension between denying wolves access to their meadows, while remaining accessible to other wild animals.

Protection within the landscape: Fixed fences, flex-nets, and guard dogs

In the Netherlands the primary focus considering the prevention of sheep depredation lays on the implementation of wolf-aversive fences (both fixed and flexible) and guard dogs. This paragraph will therefore focus on fixed fences, flex-nets, and guard dogs and will illustrate the challenges sheep farmers perceived and experienced concerning the protection of their sheep within and throughout the landscape.

Despite the many differences between sheep farmers, one of the most crucial similarities is that their grazing practices are highly spatial. Whether large- or small-scale, all sheep are in some way spread throughout the landscape.

I herd them [sheep] to get results *in the landscape*. So *there* [in the landscape] I need to protect them. – BE, Noord-Brabant

While BE emphasized that, due to his landscape management objectives, he has to protect his sheep in the landscape, this actually applies to all sheep farmers in some way. Additionally, more often than not sheep are grazing in meadows or other (natural) landscapes that are not the sheep farmer's property. Even NM, with just 12 sheep, grazes a meadow some distance from home, and out of sight. She states that she cannot expect those landowners to fully fence their land, which is why NM now moves her sheep from the unprotected meadow to her protected meadow at home every day (Figure 8). In other cases, meadows that sheep farmers use for grazing, are mowed in other parts of the year for cow feed, meaning that having fixed fences on the meadow is impractical for the dairy farmer, since the mower will not be able to mow the edges.

AB, one of the large-scale sheep farmers, mentioned that meadows are not only spread throughout the landscape and used for multiple purposes, but their location can also differ from time to time. Meadows from landowners can be transformed into croplands for example, meaning that the sheep farmer needs to find an alternative meadow. It illustrates that with these dynamic meadows, investing in a fixed wolf-aversive fence is undesirable for both the landowner, and the sheep farmer, since it is uncertain whether a meadow will stay a meadow.

Protecting sheep in the landscape with fixed fences appeared to be impossible for most sheep farmers (except some small-scale sheep farmers, as seen in Figure 9). 120cm flex-nets - mobile electric nets that can be set up and taken down – are an alternative proposed measure by BIJ12 for protecting sheep from wolves. Regular flex-nets of 90cm have been used for a very long time by sheep farmers already, and are a crucial aspect in the dynamic, mobile, and spatial grazing practices of sheep farmers. They are effective in keeping sheep inside and most dogs outside of meadows. Wolves, and sheepdogs, can however jump over them with relative ease. During my visit to JM, we set up two (small) meadows, using 90cm flex-nets (Figure 4). While this was not too problematic, setting up multiple large meadows - like BK's meadows in Figure 10 - can be very challenging, especially with 120cm flex-nets. All sheep farmers that work or have worked with 120cm flex-nets or work with 90cm flex-nets expressed concerns about the time and labour intensity of this preventive measure. While setting up a night corral consisting of four nets every week in shepherding landscape management is possible, most sheep farmers practice "meadow grazing" which requires changing meadows every one to three weeks. For large-scale sheep farmers this could mean changing multiple meadows every other day since their sheep are spread over multiple meadows instead of one large meadow. Some specific landscape management objectives require sheep farmers to transfer meadows multiple times a day. BE emphasized that he could work with 120cm nets in theory, but that it would take more labour and therefore his clients are required to pay much more for natural grazing:

If we have to say to our clients that they have to pay more... that is not going to happen, because then they will just take the mower. Then it is over. – BE, Noord-Brabant

The other two large-scale sheep farmers both emphasized that they are essentially a one-man business and therefore working with nets that are two to three times more labour consuming is impossible for them as well. AB even stated that a couple of locals help him during the weekends already with the transferring of meadows, even with the fencing system he currently uses, which are plastic poles with one or two threads through them (Figure 11 shows AB's similar, three-threaded, fences).

For small-scale sheep farmers, 120cm flex-nets appeared to be less of a challenge, since they use fewer and smaller meadows. Nonetheless, when setting up a meadow using 120cm flex-nets with PF (Figure 12), he too mentioned the time and labour intensity of using the wolf-aversive nets. I experienced this first hand too. When setting up the meadow, I immediately felt the difference in weight between the 120cm nets and the 90cm nets I set up at JM's meadow.

While physically separating sheep from wolves with the use of fences (fixed or nets) seems very challenging for most sheep farmers, guard dogs might be an alternative (Figure 13). In relation to BK's statement saying that a fence will not stop a wolf, TC argued that:

That wolf always thinks of a way to get in [the meadow]. Except when it doesn't have the time to find a way in. So if there's a fence over which it cannot jump just like that, and there are one or two evenly large dogs at the other side growling at him... I think he'll [wolf] then go to the neighbours. – TC, Limburg

Here TC stated that a guard dog can be used as an effective "add-on" to a fence. He and other sheep farmers did however express their concerns about using guard dogs. Most prominently, they were concerned about how to properly socialize them in way that they only react to wolves and dogs, and not to people. This is especially crucial in densely populated areas or recreative areas. If these concerns could be overcome it seemed that implementing a guard dog would be an appealing preventive measure, because the dogs can easily be moved with the sheep through the landscape.



Figure 9 PF's Fixed wolf-aversive fence (Author's own).



Figure 10 One of the large meadows BK's sheep graze in (Author's own).



Figure 11 AB's "three-threaded" fence (Author's own).



Figure 12 PF's wolf-aversive 120cm flex-nets (Author's own).



Figure 13 TC's and SC's young guard dog in training (Author's own).

Meadows: fenced fortress or friendly field

All sheep farmers in the study area – small- or large-scale, and independent of their farm objectives – expressed some form of fascination and appreciation for wildlife and nature in general. Many sheep farmers therefore happily share the landscape in general and their meadows with varying wild animals such as roe deer, badgers, and meadow- or predatory birds, and emphasized that it can be beneficial too:

That kestrel isn't there for nothing; it catches mice! Which means that as a result we don't have mice on our land. – SB, Drenthe

BE – large-scale landscape management – stated that five roe deer graze his meadow close to his home every day and emphasized that they probably have a good reason for grazing their, adding that it apparently fits their needs. AB, another large-scale sheep farmer that can be considered more of an opponent of wolves in the current circumstances, mentioned that roe deer graze in his meadows too and added that badgers look for food in his meadows as well. It is one of the reasons why AB is content with the threaded fencing he currently uses (Figure 11). He further stated that it would be an unjust decision to deny these animals access to his meadows. When asked how SB exactly welcomes wild animals into her meadows, she stated:

My fences surrounding my meadows should allow for roe deer to jump over them and for hares to crawl underneath them. I take those things into account. If I put a giant fence around my meadow, nothing is able to access it anymore. – SB, Drenthe

This statement of SB illustrates the concern of many sheep farmers, namely that to protect their sheep from wolves, their meadows are required to transform from a friendly field that allows access to many wild animals, to a fenced fortress that denies access to everything that cannot go

over or underneath the fence. BE emphasized that many wild animals benefit from agricultural landscapes and added that if all sheep farmers are required to implement wolf-aversive fences (whether fixed or nets) these benefits will disappear.

It illustrates their struggle in finding a way that simultaneously denies wolves access to their meadows, but provides access to other wild animals. AB expressed his wish in this regards:

You know what would be best? Something invisible that works. - AB, Drenthe

Gap between office and farm

Some sheep farmers appeared to be resourceful. BE for example is currently working on wolf-aversive nets of 90cm that are able to extend to 120cm after they are set up. TC and SC are currently working on socializing their young future guard dog, so that it only responds to wolves and dogs that are a threat. Despite this resourcefulness almost all sheep farmers emphasized that preventive measures, even those that appear to be effective, must be practical, workable, and feasible. Some sheep farmers expressed their deep concerns about the feasibility:

For me, a solution will not be found. - JM, Gelderland

In relation to the feasibility of measures, multiple sheep farmers experienced a gap between practice and policy. PF mentioned that he feels that current policy is clearly written behind a desk and that he would like policymakers to get out of their offices and visit sheep farmers more regularly to truly see how sheep farmers experience the return of wolves within the landscape:

Because then you [author] can *see* the right things, like "oh wait, he *said* this and this. But now I *see* it!" – PF, Gelderland

It shows sheep farmers' desire to be heard and seen, and additionally, their willingness to collaborate with policymakers in finding ways to coexist with wolves in the Netherlands.

5.4.2 - Wolf management

The (lethal) management of wolves is a controversial theme in Europe, due to the wolves' strict protected status. In this section sheep farmers' perceptions of (lethal) wolf management will be discussed.

Lethal management: Population control

One of the most crucial concerns sheep farmers expressed in relation to the protected status of wolves was related to the wolf population. Sheep farmers expressed their fear that wolves will eventually spread throughout the Netherlands and that their population density will increase significantly. As a consequence, they feared that the threat of sheep depredation will become impossible to deal with. SB emphasized her concern that it is unclear how fast wolves will spread, and how fast wolf populations will grow, especially if managing wolf populations is prohibited. It is an important reason for why sheep farmers argued that lethal control should be possible:

You cannot let wolves live their lives unmanaged. – AB, Drenthe

It illustrates the desire to take control over the situation. All sheep farmers agreed that population management through lethal control should be a possibility, however, most of them stated that that would only be necessary if the threat of sheep depredation becomes too large:

Imagine that I cannot farm sheep anymore, that they're all eaten within a week. – PF, Gelderland

In line with this, one sheep farmer emphasized that the need for population control depends on how significant the wolf's impact on the landscape will become. While most sheep farmers expressed their concerns for the future regarding the wolf population and density and what that would mean for their way of life, they mentioned that population control is currently not required. Some argued that wolves have not found stability in the Netherlands yet and emphasized that hunting them could destabilize the situation even more:

As long as you leave it [wolves] alone, it will become stable and the less trouble it will cause. But if you disturb it, it will start roaming, and it will start causing more trouble. – TC, Limburg

In relation, other sheep farmers mentioned that they felt it important to first give wolves time to settle and explore the Netherlands, before we start lethally managing them. Both lethal management and being patient by giving wolves time to find their way in the Netherlands, however, were experienced as potential causes of an unstable situation with roaming wolves and therefore of increased sheep depredation. From the perceptions of sheep farmers, both managing and not managing lead to wolves that can be considered "problem wolves."

Lethal management: The case of "problem wolves"

In the Netherlands, no wolves have been officially labelled as problematic, and therefore no lethal management has occurred so far. Those sheep farmers that are willing to share the landscape with wolves, all described "problem wolves" as wolves that repeatedly predate on sheep, often related them to roaming wolves, and argued that it is justified to lethally manage these "problem wolves":

If there is a wolf that cannot be stopped, then I would say "manage" [kill] it. In that case I feel that they should manage such a wolf, if it keeps making these *mistakes* [author's emphasis]. – NM, Gelderland

Interestingly, this sheep farmer argued that wolves that predate on sheep make "mistakes", a statement that some other sheep farmers made as well. They described these "problem wolves" as "insane" and "crazy." It thus appears that some sheep farmers perceived "problem wolves", that repeatedly predate on both protected and unprotected sheep or kill multiple sheep at once without eating them, as behaving in a way that differs from the expected behaviour of wolves. As a consequence, these sheep farmers expressed a desire to lethally manage these "problem wolves."

Despite most sheep farmers linking "problem wolves" to roaming wolves, and despite their significant concerns about roaming wolves compared to settled wolves, Noord-Brabant's and Limburg's settled male wolf GW1625m regularly predates on sheep, including protected sheep. One sheep farmer emphasized that this settled wolf should be considered a "problem wolf." He further argued that if this particular wolf will not be stopped – either with preventive measures or by lethal management – the chances are that this wolf will learn its potential future offspring to predate on sheep as well. He emphasized that proper conditioning of wolf behaviour is crucial for coexistence:

Because if this wolf starts teaching its offspring to do things that the wolves on the Veluwe don't do, that will not be good for the broader public support. – BE, Noord-Brabant

It is notable that he compared the behaviour of GW1625m to the behaviour of the settled wolves on the Veluwe, which are considered relatively easy wolves to coexist with, as stated earlier. Furthermore, BE mentioned that problematic wolves can be detrimental for the public support for wolves, a statement that was shared by some other sheep farmers as well. One sheep farmer noted that governmental negligence in managing these problematic wolves has a significantly larger negative impact on the public support than simply "a wolf walking around somewhere", meaning that the presence of wolves in the landscape is not necessarily a problem, but (repeated) sheep depredation is.

Neglecting management: privileging wolves over sheep

The government's reserved attitude towards wolf management was perceived to be related to the idea that the government takes the Dutch wolf population into account when considering management, instead of the entire European wolf population.

In relation to this, one sheep farmer perceived the fact that the "problematic" settled wolf in Noord-Brabant and Limburg (GW1625m) originates from the Alpine wolf population as an important reason for the government to not lethally manage this wolf. This is due to the fact that this is the only wolf from that region in the Netherlands so far, meaning that it supplies different genes to the north-western European wolf population, resulting to a healthier population if it reproduces.

Some sheep farmers expressed their confusion concerning the lack of wolf management, since many other wild species in the Netherlands are in fact intensively managed:

Wild boar are not allowed in Drenthe for example. And wolves are allowed everywhere! – NM's husband, Gelderland

In the case of wild boar, with the so-called "nulstand", the government determines that wild boar are not allowed in the majority of provinces in the Netherlands, due to the risk of African Swine Fever (LNV, 2020b). The primary reason is to protect the pork industry, notably another livestock sector. It illustrates that the government does in some circumstances decide to manage wild animals in favour of agricultural sectors and thus domestic animals. Furthermore, it positions the (provincial) government as an important actor in organizing the landscape by determining where wild boar – and wolves – are allowed to live and where not. Some sheep farmers perceived this organisational power as well, and felt that wolves hold a privileged position over other animals, both wild and domestic. They felt that considering the intensive landscape- and wildlife management approaches in the Netherlands, wolves should be managed more intensively as well.

5.4.3 - Government support: Responsibility and accountability

Most sheep farmers stated that they themselves are responsible and accountable if their sheep get attacked by wolves. Most of them emphasized that it is their own choice to farm sheep and that no one is forcing them. Nonetheless, while most sheep farmers holding themselves responsible and accountable, one sheep farmer explicitly stated that sheep farmers are not responsible for the wolf. He mentioned that he feels that the government is not taking its responsibility and is consequently disadvantaging and marginalising sheep farmers. He continued by stating:

You [pro-wolf organisations] want the wolf, you pay! - BK, Limburg

In relation to this question of responsibility and accountability, the government is obliged by law (Wet Natuurbescherming, 2017) to pay damage compensation when sheep get killed by wolves. For sheep farmers, however, it is not entirely clear why the government pays damage compensation in the case of wolves, while not in the case of other wild animals. While two small-scale sheep farmers mentioned that the protected status of wolves is the primary reason for the government to pay damage compensation, sheep farmers still expressed uncertainties considering the exact reasons. One sheep farmer and her husband started discussing what the difference is between a wolf killing a sheep, and a marten killing poultry, since sheep farmers receive compensation for a killed sheep, but not for a killed chicken. Another sheep farmer wondered why they get damage compensation in the case of a wolf attack, but not when a dog attacks their sheep:

In any case, they [sheep] are all dead. And if you count nationally, then you'll see that many more are killed by dogs than by wolves. In that sense, they [the government] picked the right deal with these compensations. – TC, Limburg

Abovementioned shows that sheep farmers found the argumentations behind damage compensation unclear in some cases and that they experienced a lot of uncertainties in relation to decisions about when they get compensated for damages caused by varying wild animals.

Moreover, AB mentioned that new policies will include that only sheep farmers who implemented preventive measures will be eligible for damage compensation. He noted that that would be strange and that in his case it would mean that he will not get compensated anymore in the future.

5.5 - Provincial government officials' views

The lens through which PGOs see the case of the return of wolves in the Netherlands is guided by laws, regulations, and policies. Hence, the following section will discuss how PGOs perceive the return of wolves in the Netherlands from a governance perspective. The following aspects will be discussed and partly relate to the sub-chapters of sheep farmers' perceptions and experiences: 1) suitable wolf habitats; 2) (co-)adaptation to wolves; 3) government support; and 4) wolf management.

5.5.1 - Presence of wolves: The case of suitable habitats

In contrast to some sheep farmers, the PGOs emphasized that what is or is not a suitable habitat for a wolf, is determined by wolves themselves. The EU Habitats Directive for example states that wolves are strictly protected in all of their natural ranges (Council Directive 92/43/EEC, 1992), moreover PGO Limburg emphasized that wolves' natural range is anywhere wolves naturally occur. Meaning that wherever a wolf decides to roam or settle, it is protected in that area, and the area is considered the wolves' natural range. All PGOs of this study argued that it is not up to them, or humans in general, to decide where wolves should or should not live, and stated that if a wolf decides to settle in an area, that probably means that that wolf finds it a suitable habitat to live. PGOs further illustrated this idea by examples of roaming wolves – which are essentially exploring the Dutch landscape for a habitat to settle in – and stated that most of the roaming wolves leave the country after a while, because those wolves apparently did not find a habitat that *they* considered suitable for settlement.

In the eyes of the law, everything is wolf habitat. Everywhere the wolf comes, is habitat of the wolf. – PGO Gelderland

PGO Limburg – who has an ecological academic background – mentioned that wolf culture could potentially influence where individual wolves might settle. He gave the example of the wolves in the Veluwe region – a large forested area, with expansive military practice areas, and a relatively low human presence – who all came from similar forested, and military areas in Germany. He contrasted this to the settled wolf in Brabant-Limburg, who settled in a fairly human-dominated area. This wolf originates from the Alpine region. This could mean that even between individual wolves suitable/unsuitable habitats are interpreted differently.

In relation, PGO Brabant emphasized that wolves' ideas of "suitable" can collide with people's ideas of "suitable", since wolves are a culture-tolerant species and can settle in human-dominated landscapes. The PGOs argued that wolves do not comply with our ideas of suitable/unsuitable, natural/cultural, or wild/domestic. Therefore, PGO Brabant argued, while we could label areas as "suitable", the consequence would be that all areas that are not labelled "suitable", are automatically considered "unsuitable", which provokes certain expectations from people considering where wolves *should* and *should not* be. He further emphasized that these expectations in combination with the fact that wolves do not comply with our ideas of suitable/unsuitable, nor adhere to our borders and boundaries, are important reasons for not designating areas as suitable/unsuitable (since this could lead to experiences of conflict).

Nonetheless, all PGOs stated that areas can be considered unsuitable when wild prey is not widely available. They emphasized that wolves in such areas will consequently predate on sheep, which is why *steering* roaming wolves out of such areas by implementing emergency preventive measures is an important strategy.

5.5.2 - (Co-)adaptation: The implementation of preventive measures

All PGOs of this study emphasized the importance of taking preventive measures against sheep depredation. They stated that preventive measures are crucial for conditioning wolves to not predate on sheep, but on wild ungulate species. One PGO explained the importance of a wide implementation of preventive measures:

In Brabant's wolf territory we still see a lot of unprotected sheep. Which means you're teaching these wolves that sheep are easy prey. – PGO Brabant

He urged sheep farmers to take preventive measures, so that co-adaptation between sheep farmers and wolves can be realized. The specific measures that the provinces of this study focus on are wolf-aversive fencing and to a lesser extent guard dogs.

One PGO emphasized that it is not necessary to fence the entire country, but that in wolf territories (areas where wolves have settled) it is paramount to implement wolf-aversive fences. He further stated that the province favours the implementation of fixed fences in wolf territories, due to its effectiveness. Nonetheless, as both PGO Limburg and Brabant acknowledged, fixed fences are only practical for sheep farmers that keep their sheep in fixed meadows. Only a small minority of the sheep farmers does. Both PGOs Limburg and Brabant mentioned that a crucial challenge in the Netherlands, is the fact that most sheep farmers have spatial and dynamic grazing practices, moving through the landscape, both in nature reserves and varying meadows of other (diary) farmers. Hence, concerning wolf-aversive fencing, mobile flex-nets are more suitable for most sheep farmers. However, one PGO stated that flex-nets are highly vulnerable, making them less effective. Additionally, all PGOs acknowledged the labour intensity of flex-nets, especially considering the spatial and dynamic grazing practices of most sheep farmers. In relation to this, one PGO argued that since sheep farmers have not taken large carnivores into consideration for approximately 150 years, they lack the habit of working with wolf-aversive nets, and stated that many sheep farmers keep their sheep in their meadows with a couple of threads (just like AB).

The PGOs further acknowledged that wolf-aversive fences can deny other wildlife species (such as badgers and roe deer) access to meadows too. An issue that multiple sheep farmers mentioned. Interestingly, two PGOs were a bit sceptical about this issue. One PGO stated that he never heard of sheep farmers that want badgers in their meadows. Another PGO argued that a simple technical solution, namely a pipe, could allow access to badgers and simultaneously deny access to wolves. He added that it is important to allow access to badgers since they are a vulnerable species. In the case of roe deer, one PGO acknowledged that 120cm wolf-aversive fences deny access to most adult roe deer, and all roe deer fowls. He added that since roe deer's conservation status is healthy, this would not be a legitimate reason to not implement a wolf-aversive fence. Notable is that these PGOs approach this challenge very technical, while for sheep farmers it is related to how they experience the (multispecies) landscape.

Two out of three PGOs emphasized that for the dynamic grazing practices of many sheep farmers in the Netherlands, guard dogs will potentially be the most, if not only, suitable and effective preventive measure:

I think that in such a situation [spatial, dynamic grazing], guard dogs are the only option, if you want to effectively protect your herd. – PGO Limburg

He recognized the challenge of socializing guard dogs in such a way that they will not attack humans. Nonetheless, he argued that guard dogs are an interesting option since socializing these dogs is making progress.

5.5.3 - Government support: Subsidies and Damage compensation

In general, government support considering the presence of wolves and the threat of sheep depredation comes in two ways: 1) subsidies for preventive measures; and 2) damage compensation for sheep depredation. Interestingly, while they have different legal bases, both are affected by notions of responsibility, accountability, and care.

Subsidies for preventive measures: Responsibility and Care

Conform the *Wet Dieren*, all sheep farmers have a legal obligation to protect their sheep from predators. Therefore, provincial governments are not legally obligated to support sheep farmers in implementing preventive measures. Nonetheless, all PGOs emphasized that their respective provinces feel a responsibility towards, and a duty of care for sheep farmers. Two PGOs mentioned that this duty of care partly comes from the fact that the sheep sector is of relatively small-scale, and not as profitable as other sectors. Additionally, one PGO stated that many sheep farmers are in a complex context in which provincial governments require them to graze natural areas to manage natural landscapes. This means that due to government employment, sheep farmers are entering wolf territory to graze natural landscapes. Therefore, according to this PGO, provincial governments assign themselves a responsibility to prevent sheep depredation.

All PGOs further emphasized that it was a deliberate political decision to take on part of the responsibility for the protection of sheep. Consequently, both the provinces of Limburg and Gelderland (and Drenthe, but no PGO of this province was interviewed) have installed a subsidy related to the implementation of preventive measures. In Brabant, this sense of responsibility has expressed itself in emergency-kits in the case that roaming wolves are in the area. PGO Limburg emphasized that the province found it more valuable and justifiable to focus on preventive measures, instead of reactive measures alone, such as damage compensation:

The rational standpoint of "we can better pay the damages" is not maintainable. It means letting sheep be torn apart by wolves, that is unacceptable, socially. – PGO Limburg

In the provinces in which a subsidy is available (Drenthe, Gelderland, and Limburg), sheep farmers are exclusively eligible for a subsidy in the by the provinces designated wolf territories (DWTs), which are areas where wolves have officially settled. These DWTs are determined based on wolf tracks (e.g. scat), behaviour (e.g. distance wolves cover during a hunt), and landscape factors (e.g. human-made or natural barriers). When asked why subsidies are exclusively available in areas where wolves have settled, and not in parts of the landscape where sheep farmers experience perhaps even more sheep depredation due to roaming wolves, all PGOs emphasized that roaming wolves are highly elusive and that it is impossible to predict where roaming wolves will appear:

Roaming wolves show such unpredictable behaviour, it is impossible to prepare for that. – PGO Gelderland

This illustrates that provincial governments and sheep farmers cannot truly govern nor prepare for roaming wolves respectively. The PGOs emphasized that in DWTs sheep farmers are expected to implement preventive measures since the threat of sheep depredation is significant and the likeliness of experiencing sheep depredation as a sheep farmer is relatively high. Nevertheless, sheep farmers perceive more threat of sheep depredation from roaming wolves, than settled wolves, illustrating a discrepancy between sheep farmers perceptions, experiences, and needs (namely protection from roaming wolves) and wolf governance, which is primarily focused on settled wolves. All PGOs stated that it is not an option to make the subsidy available in the entire

province, since it cannot be justified to invest such an amount of public money for a threat that is relatively low for most sheep farmers. This again, the PGOs emphasized, is a political decision.

Damage compensation: Law, Accountability, and Res Nullius,

Article 6.1 of the Wet Natuurbescherming (2017) (nature conservation law) dictates that provinces are obligated to pay damage compensation whenever a wild animal that is listed in Habitats Directive Appendix IV, Bern Convention Appendix II, or Bonn Convention Appendix I, causes damage to a stakeholder, i.e. a sheep farmer. Crucially, the law dictates that damage compensation is only paid if the induced damage could not reasonably be prevented (Wet Natuurbescherming, 2017, p. 46). PGOs emphasized that the fact that wolves hold the strictest protected status in the EU is one of the most important reasons that provinces pay damage compensation. They explained that by prohibiting sheep farmers in taking any form of action against the wolf, the government limits sheep farmers possibilities to prevent damages in such a rigorous manner, that the government feels a responsibility to compensate part of the damages. All PGOs explained that this differs from depredation by foxes or dogs. Sheep farmers are for example allowed to actively manage foxes, which means they have a possibility to reasonably prevent and mitigate depredation themselves. This possibility therefore minimizes the provincial government's responsibility. Furthermore, dogs are not wild animals and have an accountable owner, PGOs emphasized, therefore they are not included in the Wet Natuurbescherming.

In relation to accountability, some sheep farmers argued that the government should be accountable for cases of sheep depredation since the governments "want the wolf." However, all PGOs explicitly noted that the (provincial) government is not accountable for sheep depredation in any way, and referred to the fact that wolves have their own agency and returned on their own terms.

In relation to this, PGO Gelderland referred to the principle of *res nullius*, which means that wild animals are no ones' property, and that no one, including the government, is accountable for the acts of wild animals. He gave the example of rabbits living in a forest, but eating the crops of a farmer. In this case, the farmer held the forester accountable:

Well, that [such cases] has been widely studied by now: there is no accountability. They are not your [the forester's] rabbits. – PGO Gelderland

Finally, concerning damage compensation, all PGOs stated – with the notion that sheep depredation can reasonably be prevented – that from the year 2022 it is likely that sheep farmers that live in DWTs and have not taken preventive measures three years after the official settlement of a wolf, will not receive any damage compensation. Interestingly, some sheep farmers expressed their discontent about this decisions, illustrating that what provincial governments see as "reasonable" preventive measures, is not necessarily in line with sheep farmers' idea of "reasonable." One PGO emphasized that it cannot be expected that tax payers finance damage compensation, while sheep farmers are doing nothing to protect their sheep from wolves. He added:

There is a duty of care – if you want to call it that – at the government, but it is not endless. – PGO Limburg

5.5.4 - Wolf management

While many sheep farmers desire the possibility to lethally manage wolves more easily, all PGOs emphasized that to manage wolves, stringent requirements have to be met first. Two PGOs mentioned that the difficulty of managing wolves is not necessarily because of their strict protected status, and explained that beavers have exactly the same protected status, but are managed nonetheless. They stated that both for wolves and beavers, the same assessment needs to be made. The first aspect that should be assessed is the species' conservation status. While this is relatively easy for beavers, PGO Limburg stated, for wolves this is significantly more difficult to determine due to their mobility and therefore transboundary territories and population. Hence, assessing whether wolves' conservation status will not be significantly harmed by lethally managing a wolf is highly complex. PGO Gelderland further emphasized that since the settled wolf (GW1625m) in Brabant-Limburg originates from the Alpine wolf population, determining a conservation status becomes even more challenging since the Alpine population can be considered as a different population than the eastern European population.

Next to determining the conservation status, PGOs noted that it is essential to review the decisions and policies of other countries concerning wolf management:

Because if Germany shoots ten [wolves], are we then allowed to shoot the eleventh? Those kind of agreements must be made. – PGO Limburg

PGOs emphasized that these international agreements have not been made yet, and stated that the current legal context in Europe relating to what is and what is not allowed concerning wolf management is still unclear and ambiguous, partly because assessing the conservation status is highly complex.

Nonetheless, in some cases wolf management can be justified without a healthy conservation status. A different assessment is made in these circumstances, following the escalation ladder of the IPO Wolvenplan (Table 7). Wolves that move through the escalation ladder are considered to be "problem wolves." PGOs stated that, depending on the steps that have been taken on the escalation ladder, wolves can be labelled problematic if they pose a threat to human safety, attack dogs, or regularly predate on *protected* livestock. PGOs firmly emphasized that managing wolves is only possible if wolves attack *protected* sheep and that wolves will not be managed as long as sheep farmers do not implement preventive measures:

Anytime you want to take a next step on this ladder, you're required to have taken the previous step. You cannot skip steps. So as long as there are unprotected sheep in the meadows, actively managing wolves is not an option. – PGO Brabant

While PGOs recognized that the settled wolf in Brabant-Limburg predated on protected sheep, they argued that it is not clear how this wolf accesses these protected meadows. One PGO stated that these meadows were fenced by wolf-aversive flex-nets, and added that these nets are vulnerable, especially in rugged landscapes. Therefore, before managing this wolf, additional preventive measures should be taken. PGO Brabant mentioned that GW1625m may have learned different behaviour compared to wolves from the eastern European population, because it grew up in different a governance context and a different landscape. This relates to what PGO Limburg stated earlier about individual wolves' preferences about settling in certain landscapes. Nonetheless, both PGO Limburg and Brabant emphasized the importance of gaining knowledge about this particular wolf and how it accesses these meadows, so that preventive measures can be adjusted and improved accordingly.

Finally, all PGOs emphasized that lethally managing wolves will not solve sheep farmers' issues:

For every wolf you kill, a new one will show up, and that one will eat your sheep all the same. - PGO Limburg

In relation, PGO Gelderland stated that the act of killing is, and always will be, the final option, after all other measures that can be taken have been taken:

And there *is* a technical measure that you can take. Well, then you must take it. – PGO Gelderland

Table 7 IPO Wolvenplan escalation ladder (Adapted from IPO, 2019).

Behaviour	Cause	Assessment	Measure
Wolf kills unprotected or poorly protected livestock	Natural behaviour, wolves do not discriminate between wild and domestic prey	No danger. Be aware for specialisation on domestic prey	Implement preventive measures
Wolf repeatedly kills well protected livestock and repeatedly overcomes preventive measures	Wolf learned that livestock is an easy prey	Critical. High financial, emotional, and acceptance costs	Improve preventive measures if possible. Attempt to negatively condition wolf. If no success with conditioning, lethally manage the involved wolf, depending on conservation status

6 - Discussion

By applying a multispecies approach, this study found that how sheep farmers valued wild and domestic animals and their *proper places* in the landscape affects how they perceived and experienced the presence of wolves and the threat of sheep depredation. Moreover, co-creation of the multispecies landscape between sheep farmers, sheep, wolves, and other forms of wildlife influenced how sheep farmers experienced co-adaptation and the implementation of preventive measures. Lastly, the caring for and killing of non-human species influenced how coexistence governance was perceived and interpreted by sheep farmers. These findings will be discussed in detail below. Afterwards, the theoretical implications of the findings will be discussed. Then, the limitations of this study's multispecies approach will be discussed, followed by suggestions for future research.

6.1 - Being(s) in and out of place: Wolf presence and the threat of sheep depredation

As Ojalammi and Blomley (2015) noted: "it is not the existence of the wolf that is deemed problematic [...] but its relative location" (p. 55). It illustrates the notion of non-humans being *in* or *out-of-place*. While all sheep farmers of this study perceived wolves to be *out-of-place* at certain times, what was considered *out-of-place* and therefore which "relative location" was deemed "problematic" differed considerably amongst sheep farmers. Where some sheep farmers perceived wolves to be intruders in a cultural landscape, others found wolves to be a welcoming last sign of nature in a further overwhelmingly cultural landscape. In line with the literature (Drenthen, 2020; Hovorka, 2019; Ojalammi & Blomley, 2015; Toncheva & Fletcher, 2021), wolves were seen as reconstructing these cultural landscapes into more natural ones, illustrating their capacity to remake human space into, in Philo and Wilbert's (2005) words, *beastly places*. Therefore, the perceptions and experiences of the presence of wolves were shaped not necessarily by how sheep farmers perceived the landscape to be and what impact wolves have on that specific perception, but moreover it was influenced by what sheep farmers desire the landscape to be: cultural or natural.

In line with the literature (Doubleday, 2018; Gibbs, 2021; Hovorka, 2019), sheep farmers experienced intraspecies distinctions between (individual) wolves. As mentioned, wolves as a species in general were not per definition perceived as being out-of-place in the Netherlands, however roaming wolves were. This was linked to a relatively high level of threat of sheep depredation that sheep farmers perceived and made sheep farmers perceive more difficulties in coexisting with roaming wolves. The disparity in the extent to which sheep farmers experienced coexistence with roaming wolves compared to settled wolves, is similar to what Doubleday (2018) illustrated in her study concerning the new and original tigers. Here, sheep farmers showed a distinction between settled wolves and roaming wolves, which was linked to the wolves' spatial context (Hovorka, 2019). Whereas settled wolves were mostly perceived to be *in place*, roaming wolves were, almost per definition *out-of-place* due to their elusiveness, mobility, and because sheep farmers perceived them to regularly predate on sheep, and therefore being present in meadows. Hence, the meadow - where tensions and entanglements between biodiversity (natural; wild) and biosecurity (cultural; domestic) are most significant (König et al., 2020; Drenthen, 2020; Ojalammi & Blomley, 2015) - was the place where sheep farmers deemed all wolves out-of-place.

Nonetheless, meadows were not seen as purely cultural, human and sheeply spaces where wild animals were not allowed. All sheep farmers welcomed wildlife on their farms and in their meadows, ranging from kestrels and buzzards, to roe deer and badgers. In line with the literature, meadows were not places of a clear distinction between nature and culture, no, they were as Ojalammi and Blomley (2015) noted, a "product of human-animal entanglement in space" (p. 58). It implies that – contrary to what Philo and Wilbert (2005) noted considering the different zones for humans, domestic animals, and wild animals - wolves and other non-human species are not necessarily out-of-place when entering cultural landscapes, or spaces where they are not expected. It shows that sheep farmers' perceptions of wolves as out-of-place is not inevitably related to wolves' relative locations (i.e. wild animal in a cultural setting), but relates more to sheep farmers' own relationships with their sheep (i.e. their duty of care, but also sheep farmers' passion for this particular way of life that their sheep symbolize). Moreover, it relates to the interspecies relationship between wolves and sheep, namely that of predator and prey. It shows that a wolf in a meadow is *out-of-place* because it is a threat to the sheep, in contrast to a kestrel, buzzard, roe deer, or badger, and it therefore conflicts with the sheep farmers' duty of care. In relation, how non-human species perceive meadows could contribute to perceptions of out-ofplaceness. Whereas a wolf's perspective of a meadow as a potential hunting ground conflicts with that of a sheep farmer's perspective, a roe deer's perspective of a meadow as a place to graze is similar to a sheep farmer's perspective of a meadow.

6.2 – Co-creating a multispecies landscape: Co-adaptation and preventive measures

This study found that with the return of wolves in the Netherlands, the landscape changed. As wolves perceive the world in their own beastly (Philo & Wilbert, 2005) ways, they enact new realities to the landscape and therefore co-create it through their presence (Drenthen, 2020; Ojalammi & Blomley, 2015; Philo & Wilbert, 2005; Vaccaro & Beltran, 2009). Subsequently, wolves were found to challenge sheep farmers' perceptions of the landscape and of their practices in the landscape they had for years. Whereas keeping their sheep in multiple meadows spread throughout the landscape and out of sight used to be relatively safe (despite some dog attacks), with the return of wolves this changed. Additionally, simply "fencing in" (Kuijper et al., 2019) sheep is not sufficient anymore, and moreover, the interspecies inequalities between a trapped domestic sheep without a flight-instinct and a wild wolf with a killer-instinct have become uncomfortably clear. It illustrates that the return of wolves has changed the meaning of many sheep farmers' practices that were perceived common not so long ago. In comparison with Doubleday's (2018) original and new tigers, these new wolves enforce the need for new negotiations between wolves and sheep farmers concerning how to share the same spaces in the landscape. It asks for a co-adaption and a reorganisation of the landscape. Both sheep farmers and provincial government officials felt the urgency to do so, but more prominently emphasized that they do not know exactly how to adapt to wolves, and sheep farmers further expressed a lack of faith in the effectiveness of the proposed preventive measures by the government.

As Drenthen (2020) argued, for co-adaptation to be realized, multispecies communication is key. With this line of thought (which provincial government officials shared), it is essential that sheep farmers convey an unmistakable message to wolves that their meadows are not accessible to them. Fences are seen as an effective measure to communicate this message to wolves (Drenthen, 2020; Kuijper et al., 2019; Ojalammi & Blomley, 2015), but as mentioned, fences are a space for human and non-human overlap and entanglement too. Nonetheless, and in line with what Kuijper et al. (2019) presented, the provincial governments (and the provincial government officials) have

primarily focused on the implementation of technical measures, and most prominently on wolfaversive (fixed and mobile) electric fences to realize wolf conditioning and co-adaptation. This study shows however that sheep farmers - independent of their perceptions of wolves in the Netherlands – experienced an abundance of challenges relating to the implementation of these wolf-aversive fences. One of the most pressing challenges sheep farmers experienced originated from the dynamic and spatial nature of their grazing methods, in which sheep move through the landscape from meadow to meadow. This meant that for most sheep farmers neither fixed nor mobile wolf-aversive fences were practical to implement. It shows that not only the movement and mobility of roaming wolves through the landscape was perceived challenging (Hodgetts & Lorimer, 2020; Ojalammi & Blomley, 2015), but sheep farmers' (and therefore sheep's) mobility was as well. Illustrating that sheep's beastly ways were challenging too. Conveying a message to wolves to keep out of their meadows was thus perceived by sheep farmers to be essentially impossible. Sheep farmers further emphasized multiple times that they feel that even with wolfaversive fences, wolves will be able to get into the meadows if they want. This indicates that sheep farmers perceived wolves to be challenging or resisting (Hribal, 2007) their claim on the landscape.

Interestingly, another non-human species was perceived to be a potential solution for the challenges concerning sheep farmers' spatial and dynamic grazing methods, and the perceived lack of effectiveness of fences. Both provincial government officials and some sheep farmers mentioned the implementation of guard dogs to protect their sheep against wolves. In contrast to a passive fence, guard dogs would actively enforce their own *beastly places* to a meadow, countering wolves' attempts to do the same.

As briefly mentioned earlier, and relating to the essence of a multispecies landscape, many sheep farmers had positive experiences with sharing their meadows with other forms of wildlife, such as roe deer, badgers and kestrels. It illustrates that even before the return of wolves in the Netherlands, meadows were already a multispecies place where humans, sheep, and wild animals shared the land. Consequently, a significant aspect in some sheep farmers' unwillingness to implement wolf-aversive fences was that they perceived these fences to deny access to most other wild animals too. It indicates that how sheep farmers experience coexistence with wolves, is formed through how they relate to other wild animals. Additionally, it relates to how these other wild animals form and co-create the landscape too, and it implies that sheep farmers would be more willing to implement wolf-aversive fences if for example wild animals would not benefit from agricultural landscapes. Moreover, this consideration of sheep farmers can even be related to the passive rights (Drenthen, 2020; Wenz, 1988) of wild animals, in the sense that sheep farmers are unwilling to limit roe deer, badgers, or hares in their freedom to use the meadows.

As Ojalammi and Blomley (2015) noted: "humans' spatial practices and other species' spatial practices entangle with each other in complex and precarious ways" (p. 56). The findings of this study confirm this, and illustrate that in a multispecies landscape all sorts of species, both wild and domestic, co-create how the landscape is interpreted and formed. It additionally shows that the negotiations between sheep farmers and wolves on how to co-adapt and share the landscape are not finished yet, and that an agreement can only be found if other species are considered too. Moreover, as some sheep farmers mentioned and Doubleday (2018) illustrated with the *new* and *original tigers*, for these negotiations to come to an agreement may take time and patience.

6.3 - Caring for or killing of: The biopolitics of coexistence governance

As noted by Vaccaro and Beltran (2009), the government has the authority to make biopolitical decisions and therefore decides about the governance and management of wildlife. The findings of this study confirm this, whereas the provincial governments make most of the decisions concerning how to govern and manage wolves (including their movements). This entails, as Gibbs (2021) and Hovorka (2019) noted, making decisions between biodiversity and biosecurity and relates to the what many wildlife scientists state, namely that human-wildlife coexistence partly depends on conflicts between human stakeholders about how to manage wildlife (Hill, 2015; Madden, 2004; Madden & McQuinn, 2014; Peterson et al., 2010; Redpath et al., 2014; Young et al., 2010). This study found similar results, especially concerning the perceptions of when wolves are *out-of-place* or not, and the subsequent desired governance and management approaches.

In contrast to sheep farmers' perceptions of wolves being *out-of-place*, for the (Dutch) law – and therefore for provincial government officials – wolves are not easily considered to be *out-of-place*. As the provincial government officials in this study emphasized, legally there is no distinction between what is a suitable or unsuitable habitat for wolves, since wherever wolves naturally occur is considered their natural habitat or range. Consequently, they may roam or settle wherever they please. It illustrates that the law almost completely adheres to the passive rights that, according to Drenthen (2020) and Wenz (1988), wild animals hold. This was additionally found in the way the provincial governments thought about (lethal) wolf management. In line with Doubleday (2018), wolves that were perceived to be *out-of-place* by sheep farmers were seen as "problem animals" and this was especially found to be true for roaming wolves. Furthermore, most sheep farmers noted that "problem wolves" are wolves that (repeatedly) predate on sheep (protected or not) and should therefore be lethally managed. It is here, surrounding the question when it is justified to kill a wolf, where the disparity between sheep farmers and provincial governments was found most significant, as Ojalammi and Blomley (2015) noted as well. In relation, as Margulies (2019) showed with the case of a man-eating tiger, to legally kill a wild animal, stringent requirements have to be met first. This was found to be true in the Netherlands too, since declaring a wolf as a "problem wolf" and therefore making it killable, required wolves to predate on **protected** sheep multiple times. Nonetheless, wolf GW1625m is confirmed to have attacked protected sheep multiple times, but is not yet declared a "problem wolf", and therefore contradicts Gibbs' (2021) statement "animals become killable when deemed 'out of place'" (p. 373). The provincial government officials of Limburg and Brabant argued that the provinces want to study how this wolf gets into protected meadows, and is therefore not killed.

This indicates that different knowledge types (or modes of perceiving the world if you will) are being implemented to assess wolves as being *out-of-place*, problematic, and killable. This relates to what Toncheva and Fletcher (2021) illustrated as well since they found differences between scientific and local knowledge of bears; whereas sheep farmers perceive GW1625m to be problematic and killable, the government wants to gain additional (scientific) knowledge considering the situation and the wolf's behaviour. Moreover, in line with Ojalammi and Blomley (2015), in the case of GW1625m, the provincial governments take on the role of a "biopolitical referee" (p. 58) by encouraging sheep farmers to take extra preventive measures and emphasizing that "as long as there are unprotected sheep in the meadows" wolves will not become killable.

In line with Drenthen (2020) and Ojalammi and Blomley (2015), the findings show that the difference between sheep farmers and provincial government officials concerning when a wolf is *out-of-place*, problematic and killable is a significant reason for some sheep farmers to feel that the government is favouring the presence of wolves in the landscape over their sheep, and their

practices. It illustrates the tension between biodiversity and biosecurity. By paying damage compensation and by making the biopolitical decision to make subsidies available, it can be argued that the government acknowledges this favouring to some extent and attempts to mitigate feelings of discontent. Nonetheless, one provincial government official argued, while referring to the concept of *res nullius*, that the state is not accountable for wolves' behaviour. However, with the mention of *res nullius*, the government official implied that human organisation and governance has no influence on wolf behaviour, which contrasts to what Braverman (2018) stated, namely that human organisation does in fact shape non-human species' lives too. Therefore, it can be argued that if sheep farmers experience many challenges with the proposed measures and consequently they are not implementing them, this grants wolves the opportunity to predate on sheep. This could indicate that the provincial policies actually do facilitate a part of the wolf's behaviour, and therefore the idea of governmental accountability could be justified.

Some sheep farmers further perceived the negligence of management as a privileging of wolves over other wild animals, since many wild animals are managed in the Netherlands. These inequalities between multiple wild species was not found in the literature, however, it indicates that sheep farmers' perceptions of wolf management are influenced by interspecies relations between wolves and other wild animals, next to wolf-sheep relations.

6.4 - Theoretical implications

As this study shows, sheep farmer-wolf coexistence is not exclusively about sheep farmers and wolves. In contrast to Carter and Linnell (2016), who define human-wildlife coexistence as encompassing human-human and human-carnivore (referring to the species that is perceived to cause problems) relations, this study found that coexisting with wildlife is about more than that. Sheep farmers' perceptions and experiences of human-wolf coexistence were found to be influenced by inter-, intra- and multispecies relations, such as human-sheep, sheep-wolf, human-roe deer, human-badger, human-guard dog, and even roaming wolf-settled wolf relationships. Multiple non-human species were found to co-create and remake sheep farmers' perceptions of and experiences in the landscape, which led to certain challenges concerning the implementation of preventive measures, but also influenced perceptions of *out-of-placeness*. This study thus contributes to a better understanding of how both human and non-human species co-create the spaces they inhabit, and therefore contributes to understanding how the landscape can be organized best to mitigate perceptions of conflict between human and non-human species.

The findings further indicate that *out-of-placeness* can be an important and useful focus in human-wildlife coexistence studies. In this study applying *out-of-placeness* contributed to new insights into the dynamics between humans, wolves, sheep, meadows, and other species of wildlife. Moreover, the findings show that perceptions of being *out-of-place* are not exclusively dependent on the relative locations of species, but also on the behaviour species display in certain locations, and the interspecies relationship between species. Roe deer and badgers for example, are wild animals, just like wolves, but were nonetheless perceived to be *in place* when they accessed meadows, a cultural landscape. It indicates that the interspecies relation between wolves and sheep (namely predator-prey) plays a role in perceiving wolves as *out-of-place*.

Furthermore, this study shows that the relative location of sheep farmers in the landscape contributes to how coexisting with wolves was experienced as well. The spatial and dynamic grazing methods were found to affect the extent in which sheep farmers could adapt to wolves for example. Moreover, some sheep farmers graze in nature reserves and are thus entering the realm where wolves are in fact perceived to be *in place*, showing that the complex interplay between

species and the (multispecies) landscape is a significant aspect of coexistence. Therefore, this study provides new insights into the relationship between sheep farmers and the landscape in the context of coexisting with wolves.

In conclusion, while the concept human-wildlife coexistence attempts to be more holistic than human-wildlife conflict, it neglects multispecies relations that form and shape coexistence experiences. Research into human-wildlife coexistence could therefore significantly benefit from a multispecies (landscape) approach.

6.5 - Limitations

While this study uses a multispecies approach to explore sheep farmer-wolf coexistence, an important limitation is that a true emic perspective of the non-human species is lacking. As Buller (2015) noted, a more-than-human approach should find ways to represent "the animal that sees" rather than the "animal as it is seen" (p. 376). A true emic perspective of wolves or sheep themselves is lacking in this study however, partly because the theoretical embedding of this research changed to a multispecies approach during the research itself. Furthermore, to include an emic non-human species' perspective it is required to spend a significant amount of time with the species to observe it, which is why most multispecies studies have focused on domestic animals such as cows, horses, and dogs (Buller, 2015; Toncheva & Fletcher, 2021). As Toncheva and Fletcher (2021) note "in-depth engagement with nonhumans of this sort is more difficult to replicate in the case of free ranging animals such as large carnivore" (p. 7), hence it is extremely difficult to include a wolves' perspective due to their elusiveness, scarcity, and mobility. Interviews with ecologists, or monitoring via wild camera's are methods to include some form of wolves' perspective, however since this multispecies approach was only fully implemented in this study during the process, these methods were out of the scope of this research. Consequently, this study did not include how human organisation and structuring of the landscape (i.e. through fencing) influences the lived experiences of non-human species, such as wolves.

Nonetheless, while an emic perspective of wolves and sheep would have been a very interesting contribution, this research is still a relevant multispecies study. Since the aim of this study was to explore sheep farmers' perceptions and experiences, instead of specifically non-humans' perspectives, it includes primarily the ways in which wolves, sheep and other wildlife species cocreate meaning, perceptions, organisation, practices, and experiences in a shared landscape in relation to sheep farmers. In this regards, however, a more in-depth focus on (changing) landscape practices could have been an valuable contribution to this study.

The inclusion of ecologists (or other natural scientists) could further contribute to a more transdisciplinary, and subsequently, more holistic study, with broader understanding of both the social and ecological processes.

Finally, as this is a small-scale case study, the findings of this study cannot be extrapolated to other sheep farmer-wolf cases. The findings of this study are based on specific local realities and are therefore unique to this study's context. Nevertheless, because this study explored sheep farmer's experiences and perceptions in-depth, it found less obvious, but highly interesting and relevant themes and dynamics that influenced how the wolf context was perceived and experienced. Without this qualitative in-depth approach, these underlying themes could have been missed.

6.6 - Future research agenda

As this study found that sheep farmer-wolf coexistence is affected by other multispecies relationships, future coexistence studies should focus on more than just humans and the species that is perceived to be problematic. This can be realized through open interviews and (longitudinal) fieldwork, since by entering participants' worlds many otherwise missed topics will be discussed. Asking sheep farmers to show me around their farms and meadows, for example, led to a rich and in-depth look into their worlds, and led to conversations on themes that would probably not have been discussed in just an interview setting. Although not included in this study, simply from visiting sheep farmers it became very clear that many sheep farmers appear to have a very intimate relationship with their sheep dogs (and guard dogs, in some cases). It would be impossible to observe this through a survey, structured interview, or online interview.

Moreover, future research should additionally attempt to include emic perspectives of the non-human species that are found to be co-creating the (human) participants' experiences and perceptions. This can be done through interviews with natural scientists, fieldwork, and monitoring. This would additionally contribute in making human-wildlife coexistence research more transdisciplinary, which is needed to gain more holistic understandings of the complexities of multispecies relationships.

In relation, as the findings show, sheep farmer-wolf coexistence is formed through complex interactions between wolves, sheep, farmers, and wildlife, within the landscapes they all inhabit. Future research should therefore more prominently include the landscape itself and include a more in-depth analysis of land use practices while studying coexistence. A "multispecies landscape approach" could contribute to this.

Finally, while this study found that *out-of-placeness* can be a relevant focus for human-wildlife coexistence research, how *out-of-placeness* can be conceptualised and what determines it, is not entirely clear. Future research into for example sheep farmers perceptions concerning roaming wolves and settled wolves can contribute to a better understanding of how and why people perceive non-human species to be *in* or *out-of-place*, and therefore contribute to understanding how *out-of-placeness* (and subsequently, conflict) can be resolved.

7 - Conclusion

With increasing cases of human-wildlife conflict worldwide, the importance of enabling (peaceful) coexistence between people and wildlife is ever growing (Gross et al., 2021). Nonetheless, how to enable and govern human-wildlife coexistence appears to be a huge challenge, partly because of a human-centred approach and the focus on technical and financial fixes. Therefore, this research aimed at decreasing the existing knowledge gap concerning how to govern and enable human-wildlife coexistence and to gain novel insights into the complexities of coexistence. This was done by applying a multispecies approach to the case study of sheep farmer-wolf coexistence in the Netherlands. This case study explored sheep farmers' perceptions and experiences of human-wolf coexistence, and was embedded in the notions of a multispecies landscape, multispecies relations, non-human agency, *out-of-placeness*, and biopolitics.

Through eight field visits and in-depth interviews with sheep farmers from Drenthe, Gelderland, Limburg and Noord-Brabant, and three in-depth interviews with provincial government officials of Gelderland, Limburg and Noord-Brabant, the aim was to answer the following research question:

How do sheep farmers perceive and experience human-wolf coexistence and how can a multispecies approach contribute to the understanding of coexistence and the governance thereof?

This research demonstrates that using a multispecies approach to study human-wildlife coexistence can contribute in valuable ways to the understanding of local perceptions, experiences, and governance of human-wildlife coexistence.

To answer the first part of the research question, this research shows that with the return of wolves the perception of the landscape changed for sheep farmers. With wolves enacting their beastly places, some sheep farmers perceived a threat to the cultural landscapes they inhabit with their sheep. Others saw that with the return of wolves, "true" nature returned to an otherwise vast cultural landscape, showing that many sheep farmers recognize the entanglement of natural and cultural landscapes. But as this research shows, not all wolves are equal. Sheep farmers perceived significant intraspecies differences between roaming wolves and settled wolves, with many noting that coexisting with settled wolves is relatively easy. In contradiction, the presence of roaming wolves caused many sheep farmers to feel threatened and concerned for sheep depredation. Roaming wolves were perceived to be *out-of-place* due to their elusiveness and mobility. Moreover, roaming wolves can unexpectedly challenge sheep farmers' duty of care through their interspecies relationship of predator and prey with sheep, therefore remake meadows with their *beastly* ways. It shows that sheep farmer-sheep relations influence how coexisting with wolves is experienced.

As this research further shows, the return of wolves co-created a new landscape in which the practices of old are no longer viable for most. The presence of wolves in the landscape and the subsequent threat of sheep depredation forces sheep farmers (and policymakers alike) to change their practices and reorganize the landscape. However, the implementation of preventive measures such as wolf-aversive fences to enable multispecies communication was found to be significantly challenging. Sheep farmers appeared to be very aware of the multispecies landscape they inhabit for example, and experienced wolf-aversive fences to be an attack on their ways of sharing the landscape with other wild animals, such as badgers, roe deer, and hares. Hereby, this research shows that preventive measures communicate not exclusively to wolves to keep out, but to other species too, which was experienced to be an important factor for sheep farmers' unwillingness to implement the measures. What this shows is that sheep farmer-wolf relations are formed through sheep farmers' relations to other wild animals as well, illustrating a complex

multispecies web of relations. In this case, wolves threaten what sheep farmers considered an important aspect of sheep farming, namely working in a landscape that is shared with other non-human species and allowing these species access to sheep farmers' meadows.

Moreover, sheep's movements through the landscape were perceived to be an important challenge too. While this can be interpreted as sheep farmers' movements and practices, essentially, these are based on the needs of their sheep (their *beastly* requirements if you will), showing another example of an interspecies relation (sheep farmer-sheep) that affects how sheep farmers perceive and experience coexisting with wolves.

The use of biopolitics further showed the complex intra-, inter-, and multispecies relations and valuations that are at the core of how sheep farmers perceived wolf governance in the Netherlands. A disparity between when wolves are deemed problematic and therefore killable was an factor in determining sheep farmers' perceptions of coexistence governance. Moreover, questions arose concerning why "problem" wolves are not managed, why foxes can be hunted but wolves not, and why a manifold of wild species are managed in the Netherlands but wolves are not. Ultimately, the ambiguity of these biopolitical decisions concerning wolf management and the focus on specific preventive measures, made many sheep farmers question whether wolves (wild; nature; biodiversity) are being favoured over their sheep (domestic; culture; biosecurity), and their way of life.

Hence, to answer the second part of the research question, the use of a multispecies approach in exploring the case of sheep farmer-wolf coexistence in the Netherlands contributed to an increased understanding of human-wildlife coexistence due to the many intra-, inter-, and multispecies relations it uncovered. These multispecies relations for example showed that sheep farmer-wolf coexistence consists of more than simply sheep farmer-wolf relations, and includes relations with and between sheep, dogs, and other wildlife species. Moreover, by conceptualising the landscape as a multispecies landscape, interesting dynamics concerning *out-of-placeness* were found which added to the understanding of why some sheep farmers are more welcoming to wolves than others, and why sheep farmers perceive more threat coming from roaming wolves compared to settled wolves. Applying this multispecies approach further uncovered that all sorts of non-human species hold the capabilities to co-create, reorganize, and shape the landscapes we inhabit, and all the practices and policies in it. Furthermore, the use of biopolitics showed that intricate relations between biodiversity and biosecurity, but also between wildlife species, and differing ideas of what species are killable, influenced how sheep farmers' perceived coexistence governance.

Based on these insights, a couple of practical recommendations can be given. First, a multispecies landscape, asks for multispecies governance. As this study shows that coexistence is not about people and one non-human species, it is paramount that coexistence governance includes intra-, inter- and multispecies relations, and include multiple species, especially those species that are considered important for the people who are most involved. Sheep farmers considered roaming wolves, for example, to be much more detrimental for enabling coexistence than settled wolves. However, policy specifically on roaming wolves is scarce, other than the availability of emergency-kits. This relates to the second recommendation, namely that it can be valuable for policymakers or other government officials to show increased interest in the lives, perceptions, and lived experiences of sheep farmers, as many sheep farmers noted a gap between policymakers' offices and their sheep farms, and emphasized the importance of a policymaker to visit the farms that their policies have impact on. This could additionally result in solutions based on local realities instead of generalizations, as there is no blueprint solution for all sheep farmers, as the sector is very diverse.

To conclude, by using a multispecies approach to explore sheep farmer-wolf coexistence in the Netherlands, this research has shown the complex multispecies interactions in a shared landscape. Wolves were found to be highly active co-creators of this multispecies landscape by challenging and resisting human organisation, and additionally by enacting their own *beasty places* on the landscapes we ourselves claim. One sheep farmer explained the wolf's impact on the landscape well:

These wolves suddenly scare us and show us that we cannot [do anything we want]. We are not kings in our own empire. There are more aspects that require attention, in which we [humans] are not on top. – SB, Drenthe

The landscape with its governance and practices of old has changed. New multispecies negotiations between humans, wolves, sheep, dogs, roe deer, badgers, wild boar, and so on, are required. Coming to a new agreement may take time, as both sheep farmers and provincial government officials noted. Nonetheless, and despite many challenges, most sheep farmers showed a willingness to succeed in coexisting with wolves in a multispecies landscape.

8 - Literature

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9 - Appendices

Appendix 1: Interview guide sheep farmers

Introductie vragen

1. Kunt u mij iets vertellen over uw schapenhouderij? *Probes: locatie, aantal schapen, reden, commercieel/hobby*

2. Hoe bent u in dit vak/beroep terecht gekomen? *Probes: hoelang, waarom*

Openingsvragen

Achtergrond van schapenhouder

- 3. Hoe ziet een gemiddelde dag als schapenhouder er voor u uit? *Probes: tijden, specifieke praktijken/handelingen, dagschema, intensiteit*
- 4. Hoe zou u uw band met uw schapen omschrijven? *Probes: individuen-groep, namen, klinisch, liefdevol, verantwoordelijkheid, rol naar schapen toe*
- 5. Hoe zou u uw relatie met dieren en de natuur in het algemeen omschrijven? *Probes: waarde, betekenis, nut, schoonheid, bestaansrecht, schapenhouderij*

Sleutelvragen

Ideeën en percepties over de wolf in de Nederlandse natuur

- 6. Hoe zou u de wolf als dier omschrijven/karakteriseren?

 Probes: intelligentie, bewustzijn, sociale vaardigheden, gedrag, goed- of kwaadaardig
- 7. Hoe zou u de wolf plaatsen ten opzichte van andere wilde dieren in Nederland? *Probes: waarde in natuur, zeldzaamheid, intelligentie, gedrag*
- 8. Hoe kijkt u aan tegen het feit dat de wolf weer in Nederland leeft? *Probes: ruimte, prooidieren, hoort de wolf hier (in- of uitheems), belangrijk dat wolf terug is, dreiging, voor- en nadelen*
- 9. Wat zijn denkt u de redenen waardoor de wolf is teruggekeerd naar Nederland? *Probes: natuurbeleid, landbouwbeleid, organisaties, belanghebbenden*

10. Hoe zou u, als schapenhouder, uw relatie tot de wolf omschrijven? *Probes: positief, negatief, concurrenten, zou dit kunnen veranderen door...*

Ervaringen met wolven en predatie op schapen door wolven

11. Hoe vaak heeft u een wolf in het echt gezien? *Probes: waar, wanneer*

12. Hoe vaak heeft u te maken gehad met aanvallen op schapen?

Probes: direct-indirect, wolf of ander dier, aantal, dodelijk, aanval op ander dier, bezorgd, dreiging, verantwoordelijk

13. Hoe reageerde u op deze situatie?/Hoe voelde u uw toen?/Hoe zou u denkt u reageren als er schapen van u aangevallen zouden worden door een wolf?

Probes: dodelijk of niet, emoties, aantal dieren

14. In hoeverre bent u bereidt om te accepteren/aanvaarden dat er een kans bestaat dat er schapen van u aangevallen/gedood worden door wolven?

Probes: hoeveel schapen, onder welke omstandigheden, door andere dieren, op andere dieren

15. Zouden er volgens u consequenties moeten zijn voor een wolf waarvan is bevestigd dat die schapen heeft aangevallen of gedood?

Probes: welke consequentie, welke voorwaarden, beschermde status

Adaptatie ter bescherming van aanvallen op schapen

- 16. Hoe zouden uw schapen volgens u beschermd moeten worden tegen aanvallen van wolven? *Probes: focus op wolf of schaap, proactief of reactief, wie verantwoordelijkheid, verantwoording afleggen, welke preventiemaatregelingen, kosten, beschermde status wolf*
- 17. In hoeverre bent u bereidt om uw wijze van schapenhouden aan te passen aan de aanwezigheid van wolven in Nederland om zo uw schapen te beschermen?

 Probes: welke maatregelen, is het praktisch, gewoonte, controle over praktijk, factoren die uw standpunt kunnen veranderen
- 18. In hoeverre bent u bereidt om extra kosten te ondergaan om uw schapen te beschermen tegen roofdieren zoals de wolf?

Probes: eenmalige kosten, structurele kosten, factoren die uw bereidheid zouden vergroten

19. U heeft ... als preventiemaatregel genomen, waarom heeft u voor deze methode gekozen en niet een ander?

Probes: Hoe was het werken met deze maatregel?

Wolvenbeleid en beheer

20. In hoeverre bent u zelf in aanraking geweest met het wolvenbeleid en beheer in Nederland gericht op aanvallen op schapen?

Probes: subsidieregelingen, preventiemaatregelen, predatie vaststellen, schadeafhandeling, compensatie, hoe heeft u dit ervaren

21. Wat vindt u van het huidige wolvenbeleid en beheer in Nederland?

Probes: subsidieregelingen, preventiemaatregelen, predatie vaststellen, schadeafhandeling, compensatie, beheer van probleemwolf

22. Wat vindt u van het opgestelde risicogebied voor schapenhouders in *provincie?

Probes: valt u binnen/buiten, aanvallen buiten gebied, zwervend-gevestigd, hoe zou het risicogebied bepaald moeten worden, niveau/schaal van het wolvenbeleid

23. In hoeverre vindt u dat het huidige wolvenbeleid en beheer goed aansluit op uw zorgen en wensen?

Probes: bereidheid en vermogen om preventiemaatregelen te nemen, directe/indirecte kosten, financiële compensatie en steun, wordt u gehoord, nadruk op wolf of schapenhouder

24. Wat vindt u van uw rol als schapenhouder(s) bij het opstellen en uitvoeren van het wolvenbeleid en beheer?

Probes: participatie, inspraak, gehoord, representatie, ideeën, wolvencommissies

25. Wat vindt u van de rol van de overheid (landelijk, provinciaal) binnen het huidige wolvenbeleid en beheer?

Probes: autoriteit, verantwoordelijkheid, voeten op de grond

26. Hoe zou u, als schapenhouder, uw ervaringen met de overheid/de provincie in het algemeen omschrijven?

Probes: in hoeverre gesteund in uw beroep

27. Wat zou u aanpassen aan het huidige wolvenbeleid en beheer om ervoor te zorgen dat het beter aansluit bij uw zorgen en wensen?

Probes: wat is er al goed, wat moet beter, wat moet verdwijnen

Slotvragen

28. Ziet u liever een toekomst en landschap met of zonder de wolf in Nederland?

Probes: wat als u geen schapenhouder was geweest

29. Hoe zou een situatie er voor u uit zien waarin het mogelijk is om als schapenhouder samen te leven met de wolf in Nederland?

Probes: aantal wolven, aantal prooidieren, gebied, omheind of vrij, risico op predatie, directe en indirecte nadelen/kosten die aandacht verdienen

30. Wat is uw hoop voor de toekomst wat betreft uw schapenhouderij? *Probes: onafhankelijk van de wolf*

Afsluiting

31. Heeft u zelf nog iets dat u wilt toelichten, benadrukken, of bespreken?

Appendix 2: Interview guide provincial government officials

Introductie

Vragen over het beleid zoals het IPO Wolvenplan, de beschermde status van de wolf, hoe de provincies ermee omgaan.

Maar ook: vragen geïnspireerd door mijn gesprekken met schapenhouders. Dus wat vragen zij zich af, waar zitten zij mee, wat is voor hun onduidelijk?

Openingsvragen

- 1. Kan je heel kort iets vertellen over wat je doet voor *provincie*?
- 2. Kan je me iets vertellen over het IPO Wolvenplan?
- 3. Hoe is tot nu toe het IPO Wolvenplan in *provincie* geïmplementeerd?

Sleutelvragen

Bescherming wolf

- 4. Kan je me iets vertellen over de beschermde status van de wolf en wat dat betekent in de praktijk en specifiek voor schapenhouders?
- 5. Waarom wordt er (qua vergoeding) verschil gemaakt tussen predatie door wolven (wilde dieren) en bijvoorbeeld honden (gedomesticeerde dieren), maar ook vossen?

 Probes: Beschermde status leidt tot eigendom, aansprakelijkheid, verantwoording
- 6. In hoeverre is de provincie verantwoordelijk en/of aansprakelijk voor predatie op schapen door de wolf, kijkend naar de beschermde status? Probes: welke gevolgen heeft dit
- 7. Wat doet *provincie* op dit moment om de wolf te beschermen?
- 8. Wat zijn de belangrijkste aspecten bij het beschermen van de wolf?
- 9. Heeft de provincie een zorgplicht richting de wolf? Waarom en hoe uit dat zich?
- 10. In hoeverre wordt er rekening gehouden met de handelingsbekwaamheid/agency van de wolf?
 - Probes: overal vestigen; zijn hier grenzen aan; verwachtingen voor wolf
- 11. In hoeverre houdt het beleid rekening met de levensbehoeften van de wolf?

 Probes: moet er in iedere provincie voldoende prooidier aanwezig zijn (in IPO Wolvenplan staat dat dit kan leiden tot minder predatie op vee, moet de overheid hierin ook zijn verantwoordelijkheid nemen?); nulstand

12. Waarom wordt de wolf zo vrij en met rust gelaten in Nederland? Dit lijkt heel erg te contrasteren met hoe we normaal gesproken met de natuur in Nederland omgaan, ook kijkend naar de geschiedenis.

Probes: terechte verontwaardiging vanuit schapenhouders?

- 13. Wanneer zou beheer/ingrijpen wel denkbaar worden in Nederland? Probes: populatie; hybridisatie; predatie; probleemwolven (GW1625m)
- 14. Wat zouden beheermaatregelen kunnen zijn?
- 15. In het IPO Wolvenplan staat dat er garantie moet zijn dat er bij beheer "geen afbreuk wordt gedaan aan het streven om de populatie van de soort in hun natuurlijke verspreidingsgebied in een gunstige staat van instandhouding te laten voortbestaan", wat houdt dit in?

Probes: gunstige staat; welke schaal; wie bepaalt dit?

Leefgebied wolf

- 16. Kan je me iets vertellen over hoe leefgebieden voor de wolf in Nederland (en provincie) worden bepaald?
- 17. Hoe denkt provincie over het idee van wolvenvrije zones?
- 18. Is de wolf overal welkom in provincie?
- 19. Hoe gaat *provincie* om met het feit dat wolven enorm adaptief en cultuurtolerant zijn en zich zodoende in menselijke gebieden vertonen?

 Probes: dichtbevolkt land; weinig natuur
- 20. Waarom worden leefgebieden voor de wolf niet van te voren aangewezen in *provincie* zodat schapenhouders eerder ondersteunt kunnen worden met het nemen van preventiemaatregelen?
- 21. Wat zou *provincie* doen als een wolf zich vestigt in een sterk gecultiveerd landschap zonder natuurgebieden in de buurt? (wettelijk geldt: waar wolf zich vestigt, dat is wolf leefgebied, dus bescherm dat gebied)
- 22. Hoe kijkt *provincie* aan tegen het idee om meer geschikte leefgebieden voor de wolf te creëren in de provincie? (IPO Wolvenplan stelt namelijk dat dat niet nodig is)
- 23. Hoe moet er omgegaan worden met zwervende wolven die menselijke gebieden regelmatig betreden en schapen aanvallen?

Bescherming schapen

24. Op welke preventiemaatregelen focust *provincie* zich voornamelijk en waarom? Probes: adviescommissie; schadepreventieplan

- 25. Volgens de Wet Dieren zijn schapenhouders verantwoordelijk voor het beschermen van hun schapen tegen wolven, maar in hoeverre voelt *provincie* zich ook verantwoordelijk voor het beschermen van die schapen en waarom?
- 26. Ik heb van een aantal schapenhouders gehoord "zij willen de wolf hier, dus zij moeten zorgen dat mijn schapen beschermt worden of de schade betalen" hoe staat *provincie* hier tegenover? Voelt *provincie* een bepaalde zorgplicht richting de schapenhouders?
- 27. Ik hoor van schapenhouders dat wolf-werende afrastering andere wilde dieren dan de wolf (zoals reeën en dassen) buiten de weides zullen houden, is dit iets wat de provincie ook erkent en moet hier rekening mee gehouden worden?
- 28. In hoeverre bieden de huidige preventiemaatregelen voldoende mogelijkheden voor schapenhouders om hun dieren te beschermen? (Wolven zijn strikt beschermt dus we kunnen niks doen)
- 29. Waarom is er alleen subsidie voor preventiemaatregelen in aangestelde leefgebieden van de wolf en niet voor alle schapenhouders?
- 30. Is het eigenlijk nodig dat uiteindelijk alle schapenhouders in Nederland of provincie preventiemaatregelen tegen de wolf nemen?

Predatie

31. Wat als een wolf toch schapen aanvalt ondanks preventiemaatregelen? Ligt dit dan aan de preventiemaatregelen of aan de wolf in kwestie?

Probes: waarom bij 90cm schuld van omheining, maar bij 120cm schuld van wolf?

Betrokkenheid schapenhouders

- 32. Op welke manieren worden schapenhouders betrokken bij het opstellen en uitvoeren van het wolvenbeleid in provincie?
- 33. Ik heb van meerdere schapenhouders gehoord dat ze ervaren dat het beleid echt achter een bureau is opgesteld, en dat het in de praktijk heel anders werkt, hoe ervaren jullie van de provincie dit?

Probes: wat kan hieraan gedaan worden?

Slotvragen

34. Is er ruimte voor de wolf in Nederland en hoe ziet de toekomst er denk je uit wat betreft de wolf in Nederland?