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# Influences of Social Representations on the Development of Wildlife Management Policy

A Case Study of the Muskox of Dovrefjell-  
Sunndalsfjella National Park

Master's thesis in Natural Resource Management

Supervisor: Jørund Aasetre

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Faculty of Social and Educational Sciences  
Department of Geography



# Abstract

The muskox (*Ovibos moschatus*), also known as “Moskus” in Norwegian or “Umingmak” (The Bearded One) in Inuktitut, is a taxonomically unique herbivore, found in polar regions around the world (Kutz et al., 2017). The muskox population found in Norway’s Dovrefjell-Sunndalsfjella National Park was introduced into the national park in the mid 1900s. As the muskox population is recognized as an introduced species, the purpose of this thesis is to investigate the relationship between perceptions and management policy. To achieve this objective, ‘Social Representation Theory’ is utilized to understand the core and peripheral representations of the muskox from the perspective of three groups—park visitors, park managers, and tour operators. To compliment these findings, a thematic analysis is also conducted on management documents pertaining to the native herds of muskox found in Northern Canada. The comparison illustrates the differences and similarities between how different communities perceive the muskox, where one has thousands of years of interactions (Canadian) while another has less than a hundred years (Norwegian).

The view that the muskox is a symbol of Norwegian tourism and of the national park is a predominant theme in this research project. This research uncovers that the ‘park visitor’ tends to associate the muskox with having a deeper meaning than is seen with the ‘Park Managers’ and ‘Tour Operators’ social groups. In comparison, when exploring the native muskoxen populations in Canada, the continued presence of the muskox uncovers deep cultural attachments. Within these communities, the muskox often plays a vital role in providing food security resources as well as being tied to cultural mythology. The study into the native population in Canada also reveals the impact short-term removal or absence of a species has on cultural values and attachment.

This research has found that the inclusion of local perceptions of a species into the development of environmental management policy allows for more comprehensive and inclusive plans, with the Social Representations Theory being a powerful tool in determining local perceptions. By acknowledging and including the local perceptions of wildlife, future management plans can garner high levels of support from local populations.

# Sammendrag

Moskusen (*Ovibos moschatus*), også kjent som «Muskox» på engelsk og «Umingmak» på inuktitut (den skjeggete), er en taksonomisk unik arktisk planteeter funnet i polare områder rundt om i verden (Kutz et al., 2017). Moskusbestanden i Dovrefjell-Sundalsfjella nasjonalpark i Norge ble satt ut på midten av 1900-tallet og er anerkjent av norske myndigheter som en introdusert art. Hensikten med denne oppgaven er å utforske forholdet mellom oppfatninger av moskusbestanden og forvaltningspolitikken. For å oppnå dette målet ble «Sosial Representasjonsteori» brukt for å forstå den sentrale kjerne og perifere elementer av representasjoner av moskusen fra perspektivet til tre sosiale grupper—parkbesøkende, parkforvaltere og turoperatører. For å komplimentere funnene fra den sosiale representasjonen, ble det også utført en tematisk analyse av styringsdokumenter knyttet til de innfødte moskusbestandene som finnes i Nord-Canada. En videre sammenligning illustrerer forskjellene og likhetene mellom måten ulike samfunn oppfatter moskusen på, der det ene samfunnet har interagert med moskusen over flere tusen år (kanadisk) mens det andre samfunnet kun har interagert med moskusen i under hundre år (norsk).

Synet på moskusen som et symbol på norsk reiseliv og på nasjonalparken er et sentralt tema i dette forskningsprosjektet. Denne forskningen avdekker at de 'parkbesøkende' hadde en tendens til å assosiere moskusen med å ha en dypere mening enn det som ble sett i de sosiale gruppene 'parkforvaltere' og 'turoperatører'. Til sammenligning, avdekker utforskning av de innfødte moskusbestandene i Canada at den kontinuerlige tilstedeværelsen av moskusene har ført til dyptliggende kulturelle tilknytninger. Innenfor disse samfunnene spiller moskusen ofte en essensiell rolle som ressurs for matsikkerhet i tillegg til å være knyttet til kulturell mytologi. Videre avdekker forskningen av de innfødte moskusbestandene i Canada også virkningen kortsiktig fjerning eller fravær av en art kan ha på kulturell verdi og tilknytning i et samfunn.

Forskningens funn viser at inkluderingen av lokale oppfatninger av en art i utviklingen av miljøforvaltningsplaner åpner for mer omfattende og inkluderende planer der Sosial Representasjonsteori vil være nyttig verktøy for å avdekke lokale oppfatninger. Gjennom å anerkjenne og inkludere den lokale oppfatningen av dyrelivet, kan fremtidige forvaltningsplaner oppnå høye nivåer av støtte fra lokalbefolkningen.

# Acknowledgments

This master's thesis represents the end of two exciting years of study in Trondheim. During this time, I have been able to develop my interests in wildlife management and the protection of natural areas. This thesis has allowed me to further explore the development of management policy and the role local perspectives can have in influencing the outcomes. The process which has led me to reach this end result has been filled with many ups and a few downs, but the completion of my thesis has instilled a large sense of achievement.

There are many people who have played a vital role in helping me achieve the objective. Firstly, I would like to thank my supervisor, Jørund Aasetre, for all of his support and guidance. His feedback and guidance was essential in helping guide me in the right direction. Secondly, I would like to thank my parents, their consistent support and belief in my abilities has provided great encouragement to me along this path. I also want to thank the 'Shrimpybois', and all of my friends who I have made while I have been in Trondheim. All of you have become like a second family to me.

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## List of Abbreviations

SRT	Social Representation Theory
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# 1. Introduction

## 1.1 Topic and Background

Within wildlife management, exists a multitude of approaches—including both top-down and bottom-up methods. These bottom-up methods look to utilize local perceptions towards wildlife as building blocks in the creation of comprehensive and inclusive management plans (Aswani et al., 2015). Community engagement in the policy process also helps to strengthen the connection local communities have with the landscape (Aquino et al., 2021). A component of wildlife management also looks at managing the ways in which humans interact with wildlife. This component is becoming increasingly important as concepts of nature and wildlife-based tourism continue to rise in popularity. The development of management strategies which both allow the development of tourism economies while still conserving the natural environment is an important balance which needs to be struck.

Social Representations Theory—a sociological approach which utilizes the collective thoughts of social group towards and object, can be a useful tool in determining community perspectives towards wildlife (Skogen et al., 2019). The usage of social representations theory has been used in the management of animals throughout Europe, especially when looking at large carnivore species. The usage of community perceptions when creating management policy plans has been shown to result in the development of greater levels of acceptance of the implementation of management policy.

## 1.2 Purpose and aim of study

The purpose of this master's Thesis is to determine the social representations of the Muskox population in the Dovrefjell-Sunndalsfjella National Park, Norway. This study looks to utilize qualitative research methods to better understand how different social groups perceive the muskox. In addition to exploring how these representations have influenced related management policy which has been developed and carried out by governmental bodies. The social groups involved in this study include Park visitors (both international and domestic), Government officials, and Muskox Safari operators—local business operators who capitalize on guiding tourists to see the muskox. Stemming from this topic, the study also looks to understand how the classification and status of muskoxen, as an introduced species, has influenced the way in which the animal is perceived by social groups. The data collected through the qualitative approach will be used to answer the following research questions:

- 1 What are the social representations of Muskox, and do they differ amongst different social groups?
- 2 How do the Social Representations of the Muskox population in Dovrefjell-Sunndalsfjella National Park, compare to populations of muskox found in other locations?
- 3 How have the Muskoxen social representations influenced the ways in which the animal has been managed by the government?

Social representations towards an object are constructed from the shared background of a social group. As a result, the perceptions of the muskox can change greatly depending

on the background of the social group. Within the first question, the social representations of the three social groups will be contrasted against each other, especially focusing on the differences in the representations held by the Visitors compared to the government, and the muskox safari operators compared to the government. The second question will look at the comparison between the social representations of muskox of Dovrefjell-Sunddalsfjella National Park compared to muskox populations located elsewhere in the world, especially in regions where the muskox are native or endemic species. This comparison allows for insight into how a species status, as either introduced or endemic, can influence the way cultural and social groups compose their social representations. The third and final question looks to branch off the established social representations and examines how social representations have impacted the creation of both the national park management plan and the muskox management plan.

### 1.3 Thesis Outline

This thesis will be composed of seven chapters, with the first chapter illustrating the major topic and research objectives for this project. Chapter 2 looks to provide a background about muskox, including a look at the current global outlook for the species. This will also include a description of the research study area, the Dovrefjell-Sunddalsfjella National Park. Chapter 3 looks to focus on relevant academic theory regarding wildlife management and tourism management. Within this chapter, initial focus will be placed onto individual attitude studies and theories such as "Views of Nature" and "Social Tolerance theory", and then will progress into examining the construction of Social Representation theory. Lastly the theory section will be concluded through looking at considerations on wildlife tourism and how social representation can be utilized in the wildlife management decision making process. Chapter 4 describes the qualitative methodology used in this study for data collection, as well as including ethical considerations for the research that was conducted. Chapter 5 presents the findings from the interviews and questionnaires from the participants. In Chapter 6, the results will be further discussed, and will create bridges back to the theory. Within this chapter, this thesis will further examine the role social representations have played in the creation of the Muskox Management policy plan, as well as looking at how management plans in other countries reflect their own social representations of the animal. Finally, Chapter 7 will be used to draw conclusions from the discussion and identify areas for future reference.

## 2. Background

### 2.1 Current Global Status of Muskox

The muskox (*Ovibos moschatus*) is a large herbivore found in cold northern ecosystems. Within the communities which share the landscape with the animal, the muskox has an important role in the establishment of cultural identity. Currently the muskox has a circum-arctic distribution and can be found in either native/endemic or translocated herds in Canada, Greenland, Norway, Russia and the United States of America (Kutz et al., 2017). The term endemic refers to a population of animals which is both native and confined to a specific geographic area. On a global level, the muskoxen population has been estimated in 2016 to be around 170,000 animals, with the majority of the animals being found within endemic herds of northern Canada and northern Greenland (Cuyler et al., 2020). Current locations of herds of muskox are shown in Figure 1, highlighting the locations of both endemic and introduced populations. The areas where the muskox has

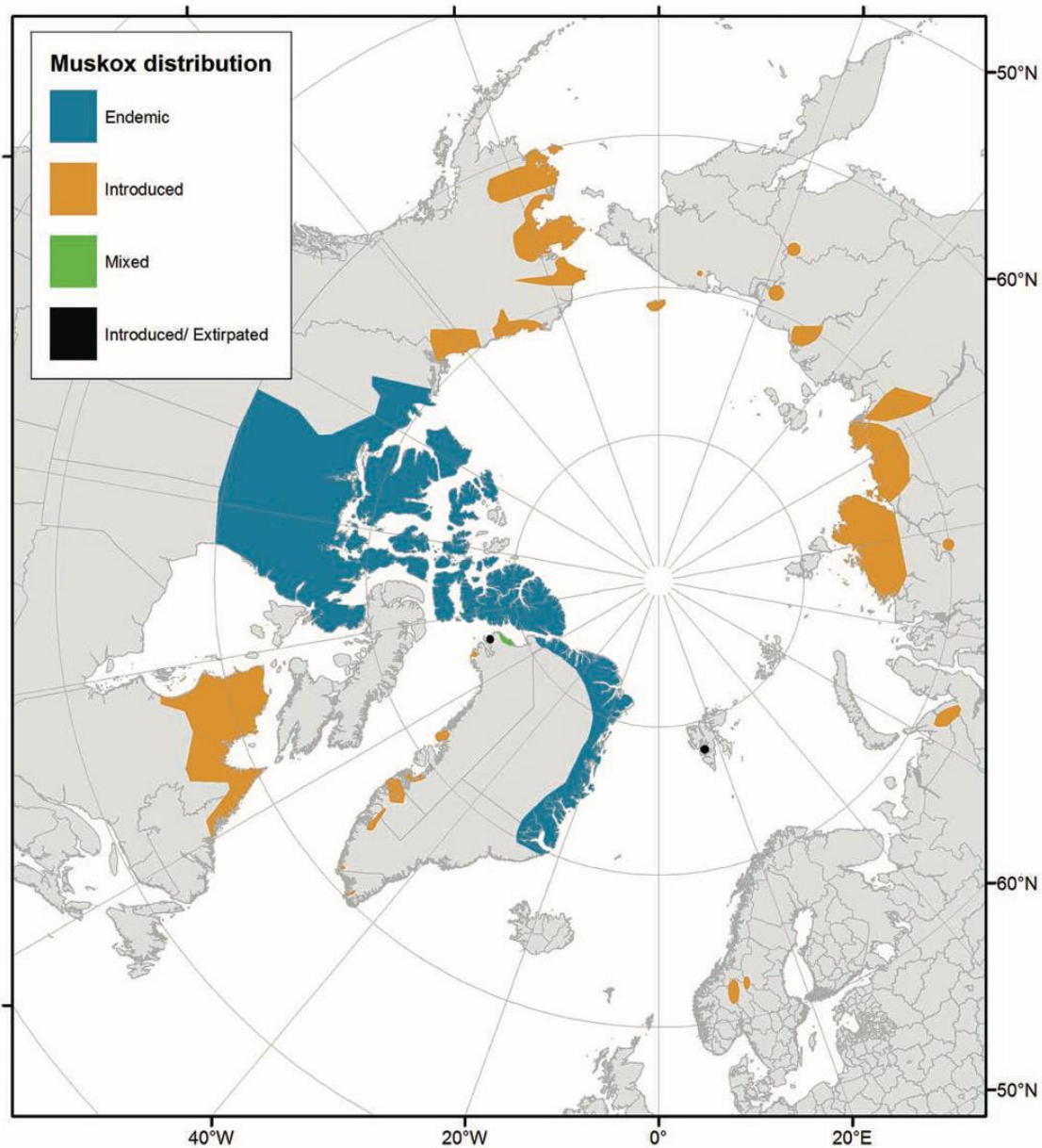


Figure 1: Map depicting the current global extent of Muskoxen. Map taken from Kutz et al. (2017)

been reintroduced into areas where they have been historically extirpated—a term which refers to when a species no longer exists within a specific ecosystem but can be found elsewhere in the world (Sipko et al., 2003)

When looking at the reintroduction efforts of muskox in Canada, Greenland, Norway, Russia, and the United States, there are large variances in the motivations behind the reintroduction. In the United States—specifically Alaska, the population of muskox was extirpated in the late 1800s, as a direct result of overhunting (Jingfors, 1980). Efforts for the reintroduction of the animals began in the 1930s, with a small population of muskox brought over from Eastern Greenland and transplanted into the known historic ranges of the muskox. When looking at the motivations behind this reintroduction, one of the primary drivers was to aid in global conservation efforts for a species threatened by extinction.

This motivation to help prevent the global extinction of muskox was seen with the introduction of muskoxen into western Greenland. Muskoxen were introduced into the Angujaartorfiup Nunaa region for two main reasons. The first reason was to help prevent the extirpation of the muskox from Greenland, by providing a “reserve” herd of muskox. The second motivation was to establish a stable meat source for local hunters (Olesen, 1993).

Canada’s introduction of muskoxen into Northern Quebec was originally based on the goal of establishing a functioning muskox farm to harvest qiviut—muskox wool. This farm venture ultimately failed due to administrative shortcomings, and the muskoxen were released into the local environment (Chubbs & Brazil, 2007; Gunn, 1983). Like the motivations seen with the west Greenland reintroduction, the release of the muskox into the environment was also to help provide greater food security for local people. Since reintroduction, the population of muskox has been able to successfully establish itself and the population numbers have grown significantly up to 4000 individuals in 2019 (Cuyler et al., 2020).

With the Russian population, there is no definitive date of when the population was extirpated from the landscape, however fossil records suggest the population went extinct 2000-4000 years ago (Sipko, 2009). There have been two main reintroduction efforts of muskox into Russia, with the first effort in 1974 which saw ten muskoxen taken from Canada’s Bank Island herd introduced into Taimyr Peninsula (Sipko et al., 2003). This population has been allowed to grow naturally and has expanded across the peninsula (Sipko, 2009). The second introduction in 1975, brought in 20 muskoxen from Alaska and were introduced onto Vrangal Island. This second introduction has not been as successful as the earlier introduction into the Taimyr Peninsula and the growth of the herd has been significantly slower (Sipko et al., 2003). Since the introductions, muskoxen have been taken from both of these locations and moved to other regions of the country, in effort to meet government mandates to increase biodiversity within Russia’s arctic regions (Sipko, 2009).

While there is variation in the motivations behind each of these reintroductions, they also share other key characteristics. In all cases, the muskox population has been allowed to naturally expand across the landscape. While most seen in the Russian introduction, the other introduction efforts also shared a common goal of looking to restore biodiversity within the arctic ecosystem. In addition, when looking at Alaska, Canada, and Greenland, the introductions have also worked to help build greater food

security for local and indigenous peoples. When looking at the introduction efforts in Norway, some differences in motivations and current management exist.

## 2.2 Muskox in Norway

The Muskox has had both a short- and long-term history within Norway. During the construction of the rail line through the Dovre region during the early 1910s, fossil remains of the muskox were discovered which dated back 30,000-100,000 years ago (Dovrefjell Nasjonalparkstyre, 2022b; Jørgensen, 2019; Rangbru & Seljevoll, 2017). The discovery of these remains motivated the first “re-introduction” of muskox in 1932. In addition to their introduction into the Dovrefjell region, the Norwegian government had also attempted other reintroduction projects in areas near Ålesund (1925-26), Svalbard (1929), and in Bardu (1948) (Rangbru & Seljevoll, 2017). These introduction efforts however did not lead to the establishment of herds in the areas, largely attributed to inhospitable environmental conditions such as high moisture and precipitation levels.

During the Dovrefjell introduction effort, 10 muskoxen captured in Greenland—three males and seven females, were released near the Hjerkin Station. Throughout the 1930s, the muskoxen population in the area had experienced a slow growth, however natural incidents such as avalanches, lightning storms, and diseases, kept the population very small (Dovrefjell Nasjonalparkstyre, 2022b). The onset of the second world war would prove to be the final pressure on the muskoxen population in Dovrefjell, with the remaining individuals being killed off by German and Norwegian hunters. It would not be until the second world war ended, that the Norwegian government would restart their efforts to bring the muskox back to Dovrefjell. During the years 1947-1953, a second reintroduction was undertaken, which saw another 27 calves taken from Greenland to Dovrefjell (Lønø, 1960; Rangbru & Seljevoll, 2017). In 1953, efforts to bring more animals into the park had ended. At this point only 11 calves were still alive, as the others had died due to disease or injury. This year also marked the first birth of a calf in Dovre and was the turning point for the herds population to start growing, with the average growth rate of 2 calves per year (Lønø, 1960).

Currently, the muskoxen are allowed to exist within a core management area, located near Hjerkin and Kongsvoll. Due to the management area, the population has grown to approximately 200 individuals, which is the population limit set by the park managers (Rangbru & Seljevoll, 2017). Due to the population being heavily managed by local government officials, the population is defined as being “stable” (Cuyler et al., 2020; Kutz et al., 2017). Under the current management definition of the muskox, the population is classified as being a low-risk, introduced species, which means the species is allowed to continue existing within the management area, however it is undesirable for the population to establish itself outside the core area (Rangbru & Seljevoll, 2017).



## 2.3 Study Area

The study area for this thesis will be primarily focused on the core management area of the muskox in the Dovrefjell-Sunndalsfjella National Park in Norway. The core management area comprises an area of 340km<sup>2</sup>, and is located to the west of the E6, near the villages of Hjerkinn and Kongsvold, as shown in Figure 2 (Rangbru & Seljevoll, 2017). The areal distribution of the core management area is spread across three different municipalities, Dovre, Oppdal, and Lesja. Due to the probability of muskoxen to venture outside of the Core management area, the entire Dovrefjell-Sunndalsfjella National Park will also be considered as a part of the broader study area. The establishment of a core management area was first implemented from the muskox management plan developed in 2006. The range of the area was determined from observations of grazing areas frequented by muskox over a 20-year period (Rangbru & Seljevoll, 2017).

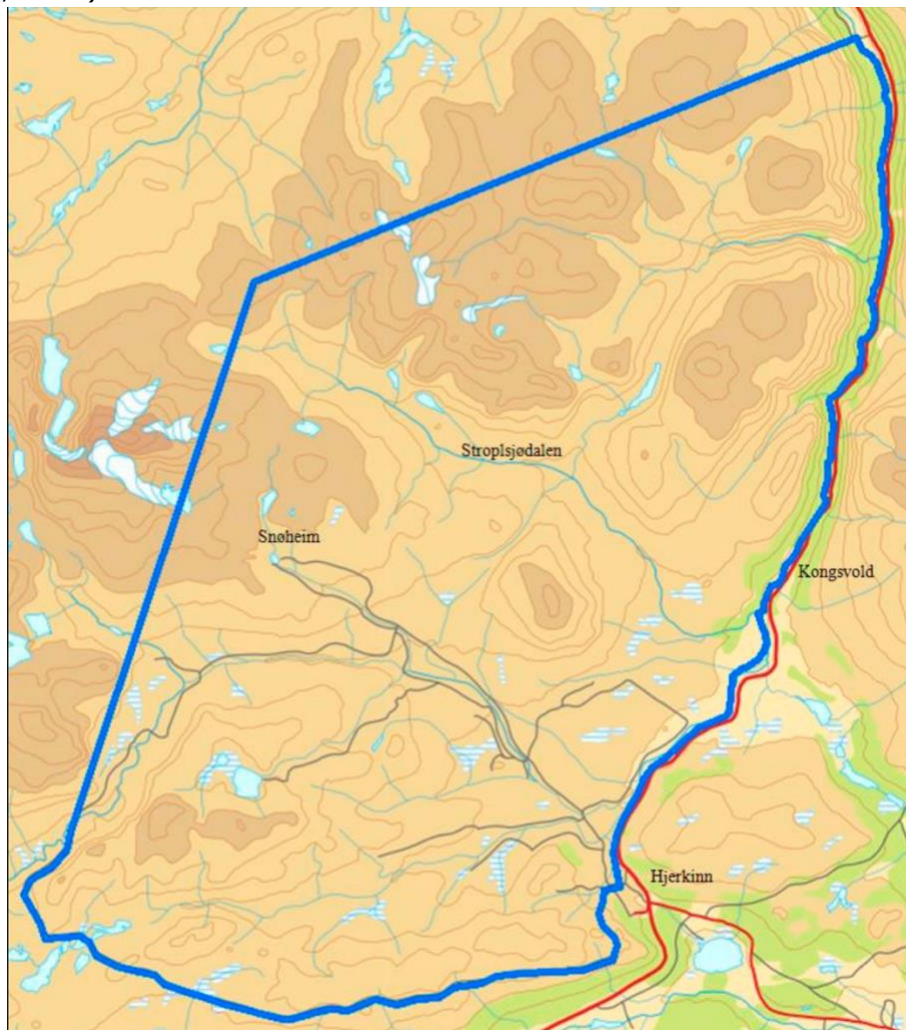


Figure 2: Overview of the core management area of the muskox population in Dovrefjell-Sunndalsfjella National Park. Taken from Rangbru and Seljevoll (2017).

The Dovrefjell-Sunndalsfjella National Park is one of the largest national parks in Norway, covering approximately 4,367 km<sup>2</sup> (Dybsand & Stensland, 2022). The park was founded in 1974, and has been expanded twice, in 2002—when the name changed from Dovrefjell National Park to Dovrefjell-Sunndalsfjella National Park, and in 2018 (Miljødirektoratet, 2018). The expansion in 2018 included the former Hjerkinn firing range, following the national government's decision in 1999 to close the range and

restore nature back to the area. The primary purpose the national park is for the management and care of a large wilderness areas which contains distinct and untouched ecosystems, and prevent the encroachment of intensive human activity (Miljødirektoratet, 2018). In addition to the muskox, there is a multitude of native wildlife species found in the Dovrefjell-Sunndalsfjella National Park including Wild Reindeer (*Rangifer tarandus*), Wolverine (*Gulo gulo*), and Arctic fox (*Vulpus lagopus*) (Miljødirektoratet, 2014). The native animals found within the park also have special characteristics about them. The wolverines found within the national park are unique in that they are the only population within Europe which live in a virtually intact high mountain ecosystem, while the reindeer population is recognized as being one the last remaining genetically wild populations in Europe (Miljødirektoratet, 2018)

## 3. Theory chapter

### 3.1. Approaches to Human - Wildlife Studies

#### 3.1.1. Attitude Studies

The role of wildlife management has become increasingly linked with public perception. Management actions which are made without the incorporation of public perception often risk the potential of substantial political backlash (Reiter et al., 1999). The need for a consultation process is especially important in the areas pertaining to individuals hunting and land access rights, as well as management decisions regarding key or iconic species. To better understand the public's attitude towards human-wildlife management, American social-ecologist Stephan Kellert looked to develop an understanding of the level of knowledge of the public—from differing social demographic backgrounds, towards different wildlife species. In addition, Kellert also looked to form perceptions on key wildlife management issues such as endangered species, predator control, and wildlife habitat protect (Kellert, 1985). This resulted in the development of 10 distinct "attitudes" towards nature. All of the developed attitudes are valid when looking at the perceptions of animals and nature, however the humanistic, moralistic, utilitarian and negativistic attitudes are more commonly held when perceiving nature (Kellert, 1985). Other attitudes such as scientific and dominionistic were identified as being significantly less common. Kellert also highlighted individuals' attitudes were also influenced based on gender, geographic location, ethnicity, and other socio-geographic factors. Of these socio-geographic factors, gender was identified as being the single most important influence on attitudes towards animals, with females typically scoring significantly higher on issues regarding attachment to animals, as well as animal welfare (Kellert & Berry, 1987).

The usage of attitude studies in relation to understanding human-wildlife interactions was first seen in the United States of America, to examine the public perspective on the management of problematic wolves (*Canis lupis*) and coyotes (*Canis latrans*) (Reiter et al., 1999). This approach has also been adopted within Norway to examine the attitudes towards wolves in south-eastern Norway (Bjerke et al., 1998). With both studies, a common theme of more rural communities holding negatives attitudes towards the presence of predators, while urban communities held more positive, tolerating views, was uncovered (Bjerke et al., 1998; Reiter et al., 1999).

While the attitude studies approach can determine public sentiment towards management issues, the approach also comes with some inherent flaws. The first major flaw, as identified by Reiter et al. (1999), is the temporal longevity of the attitude. The attitudes and perspectives obtained from the questionnaires can only be viewed as being accurate for a limited timeframe. As the length of time increases, so too does the potential for social perceptions to evolve. The other issue, as identified by Reiter et al. (1999) is the overall accuracy of the results in terms of representing the entire population.

##### **3.1.1.1 Attitudes towards Animals, and the Establishment of Polar Imperialism**

Within the realm of attitude studies, there has been extensive research conducted to understand individual and groups attitudes towards animals. The understanding attitudes towards animals is useful in determining public attitudes towards critical wildlife and natural habitat issues (Kellert, 1985). One of the primary drivers in this field of research

is Kellert, who created a typology of the basic attitudes towards animals, which resulted in the identification of the following 9 core attitudes: Naturalistic, Ecologistic, Humanistic, Moralistic, Scientistic, Aesthetic, Utilitarian, Dominionistic, Negativistic, and Neutralistic (Kellert, 1985). With this typology, it is not uncommon for different attitudes to clash with each other, for example Utilitarian attitudes—which looks to utilize animals for human material benefit through means such as hunting, trapping, and animal husbandry, clashes with the moralistic attitude—which opposes the exploitation of animals (Kellert, 1985). Individual attitudes towards animals are also influenced by the cultural and social group an individual belong to. Historically, animals have long closely associated with cultural and symbolic meanings, which have influenced the way people regard and treat them. According to Serpell (2004), there are four overlapping categorizations of these symbolic and cultural meanings: historical, religious beliefs, cultural practices, and cultural representations

Attitudes towards animals can also be used to help better understand the motivations of the Norwegian government to introduce polar species into Norway during the early 1900s. According to Roberts and Jørgensen (2016) the introduction of both penguins and muskox into Norway were attempts to establish a form of polar authority and dominance. The concept of ecological imperialism has been commonly used to describe how the translocation of animals and plants can be used to help overturn existing political and social systems (Crosby, 1986). This transference of both muskox and penguins acted as an effort to display the dominance of Norway over the polar regions, and as a result could be classified as being dominionistic—which focuses on the mastery and control of animals, which Roberts and Jørgensen (2016) argue is also heavily tied with displaying mastery over space (Kellert, 1985). In other aspects, the simple act of being able to successfully translocate populations of animals also symbolizes Norway's knowledge and mastery of the land and environment, which helps make translocations more of an issue of logistics, as opposed to ecological.

### **3.1.1.2 Social Tolerance and Wildlife Acceptance Capacity**

Within human-wildlife interactions, there are various components and aspects which need to be understood. One of these aspects is the concept of tolerance, which looks at the levels of which humans will tolerate a certain species sharing their landscape. In many cases, when looking at carnivores, endangered or threaten species, and other wildlife, these tolerance thresholds can be just as important as ecological limits, such as the carrying capacity of the land (Brenner & Metcalf, 2020; Bruskotter et al., 2015). Within the conflict side of the human-wildlife relationship is the attitude of the intolerance—the inability to accept or accommodate wildlife. While intolerance can take many different forms, such as the purposefully killing of specific animals, or advocating for the removal of species or populations at the governmental level, it can largely be summed up as behaviours which negatively impact animals (Bruskotter & Fulton, 2012).

Contrasting the concept of intolerance is the more positive concept of stewardship (Bruskotter & Fulton, 2012; Bruskotter et al., 2015). This concept is defined by actions and behaviours taken specifically for the benefit and care of a resource. Within the context for wildlife conservation and management, the concept of stewardship is viewed as being the actions taken to positively impact and benefit wildlife populations, species and or habitats. Bridging the gap between intolerance and stewardship is the final idea of social tolerance and acceptance. These concepts have been used to help evolve the concepts of human-wildlife conflict into human-wildlife coexistence. The concept of tolerance is the attitude which focuses on passive interactions with wildlife and wildlife

management. This can be displayed through the ability residents to tolerate and accept damages caused by wildlife up until a given threshold, especially if the animals are viewed as beneficial—on cultural, spiritual, economic, or political levels, by the surrounding society (Frank, 2016). In combination with tolerance, the concept of acceptance is also heavily related in looking at human attitudes towards wildlife. According to Bruskotter and Fulton (2012), tolerance and acceptance share two important characteristics: (1) Inaction or passive restraint on the part of affected individuals or societies is the “normal” state; and (2) there is some point at which passive inaction ceases and actions designed at reducing or negatively impacting a species are taken on behalf of the species (Bruskotter et al., 2015).

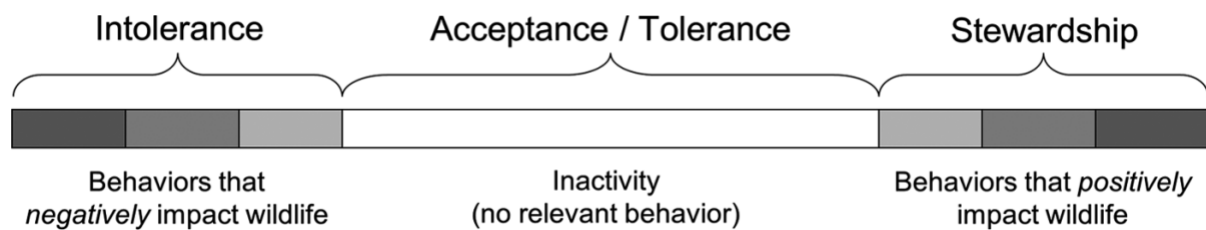


Figure 3: Conceptual model of wildlife conservation behaviour, taken from Bruskotter & Fullton (2012).

One measure in determining social tolerance towards wildlife is “Wildlife Acceptance Capacity” developed by Decker and Purdy (1989), which looks to understand the acceptable limits of wildlife population within a given area. The use of this model helps to illustrate how low levels of tolerance towards a specific species could limit the frequency, distribution and population size of a species within a given area (Bruskotter et al., 2015). When a population reaches or exceeds a given threshold, the population can become viewed as being unacceptable, and actions to limit or reduce the population can occur.

The usage of social tolerance and wildlife acceptance capacity has been most often used when looking at the predators. These animals are often at the centre of human-wildlife conflicts, as threats to livelihoods and personal security drive conflict and intolerance. While predators are often the main point of focus, there is also cases in which non-predatory species have been examined. One example is Elk (*Cervus elaphus nelson*) populations within National Parks in the United States of America. Elk population numbers have grown dramatically over the last 30 years, due to a multitude of factors including changing land use plans, as well an absence of predation—linked to the anti-wolf policy in the early 20<sup>th</sup> century and prohibitions on hunting (Fix et al., 2010; French, 2015). The rise in elk population numbers has had an adverse effect on the regeneration of willow and aspen species within the parks, as well human impacts in surrounding communities. These impacts have resulted in the exceedance of the tolerance towards elk. While these impacts to humans may be most obviously felt at the individual level, effective change needs to be taken at the community or state level to develop effective and long-term solutions (Schusler et al., 2000).

In many cases, the exceedance of the wildlife acceptance capacity is a social issue, with different social groups having differing definitions on what or where the capacity limit should be drawn (French, 2015). Tying this into social representations, the ways in which an animal is represented to a social group, will influence the respective capacity limit. In the case of elk populations within Montana, USA, farmers, and ranchers would like to see the population limits decreased. Contrasting this, hunting groups would likely

advocate for the numbers to further increased as decreasing numbers of elk on publicly accessible land has reduced hunting opportunities. As mentioned by Frank (2016), many factors can influence attitudes and behaviours as well as where an individual might land on the conflict-stewardship continuum. These factors can include the species involved, the location, and the individual's cultural, as well as being heavily tied to various other sociocultural backgrounds. All of these terms—intolerance, acceptance, tolerance, and stewardship, can be used to capture judgements (attitudes and perceptions) and behaviours (actions and policy decisions) towards wildlife at the individual level (Trevés & Bruskotter, 2014). While these attitudes are held at the individual level, they are reflective of the greater social group they belong to.

### 3.1.2. Environmental Discourses

Within a general context, the concept of discourse can be viewed as a discussion or a mode of talking. More specifically, discourse can be viewed as “a specific ensemble of ideas, concepts and categories that are produced, reproduced, and transformed in a particular set of practices and through which meaning is given to physical and social realities”(Hajer, 1995, p. 44). This definition is consistent with the way discourse analysis has been represented within Foucauldian Discourse Analysis, which emphasizes how knowledge systems shape the way people view, experience, and interact with the world. Developed by Michel Foucault, the Foucauldian framework works to examine how discourse surrounding the natural environment (plants, animals, and places) influences what people determine as being “Truth”, which in turn is also heavily linked with the creation of power and can act as the basis for ideology (Feldpausch-Parker et al., 2017). This view on discourses created by Hajer and Foucault both look at the influence of discourse within the political realm (Feldpausch-Parker et al., 2017; Gustafsson, 2013).The objective of drawing connections between peoples and the land, is commonly associated with, and used within geographic qualitative research (Waitt, 2016). The approach, commonly labeled as being constructionist, investigates the understanding of how social accepted norms and realities have been constructed as truth (Waitt, 2016).Within the environmental realm, environmental discourse looks to examine the construction and caption of environmental ideas within science, media, art, and everyday life (Gustafsson, 2013). When looking into three prevalent views of nature, Gustafsson (2013) was able to draw connections towards other existing discourses. This interconnectivity in theory shows that both views and discourses are utilized in the creation and distribution of environmental narratives.

The use of discourse however can also lead to the creation of division within the public, as specific groups might be given more power and with their ideologies being viewed as “truth”. This is exemplified within Feldpauch-Parker et al. (2017) when examining the role of consumptive uses of nature being needed to finance conservation objectives. Feldpauch-Parker explains how this narrative presents a belief which places greater importance on hunters above other conservational stakeholders, making the act of hunting a critical component of conservation. Within this narrative, it is possible to see how the use of a discourse can alienate individuals and groups who are not members in the discourse.

### 3.1.3. Studies of Social Representations

Branching away from more individualistic views towards nature displayed through attitude studies. Social Representation Theory (SRT) looks at views towards nature at a larger, community scale. Developed by Serge Moscovici, SRT is a social psychological framework which recognizes the role of historical, cultural, and macrosocial conditions in

the creation of social phenomena and processes (Moscovici, 1988; Wagner et al., 1999). A social representation—simply viewed as a “social thought.” Moreover, it is viewed as a collection of expressed thoughts and feelings held by a social group towards a specific object (Wagner et al., 1999). This theory is built on the belief that human thought is rooted in historical and cultural structures (Figari & Skogen, 2011). The development of social representations starts at a young age, with educational systems, parents and media working to instill specific ways to perceive and interpret the world and things around us. Social representations are further shaped through the exchanges with groups and communities an individual chooses to associate with (Rateau et al., 2012). Social groups, as defined by Wagner et al. (1999), are comprised of a minimum of four individuals which possess a shared understanding of social phenomena. This shared understanding of the world provides a basis for communication and other social interactions. Differences in shared understandings provide the ability to differentiate between social groups. These groups are also rarely isolated from each other which allows for knowledge and values to flow between groups, resulting in social representations being dynamic.

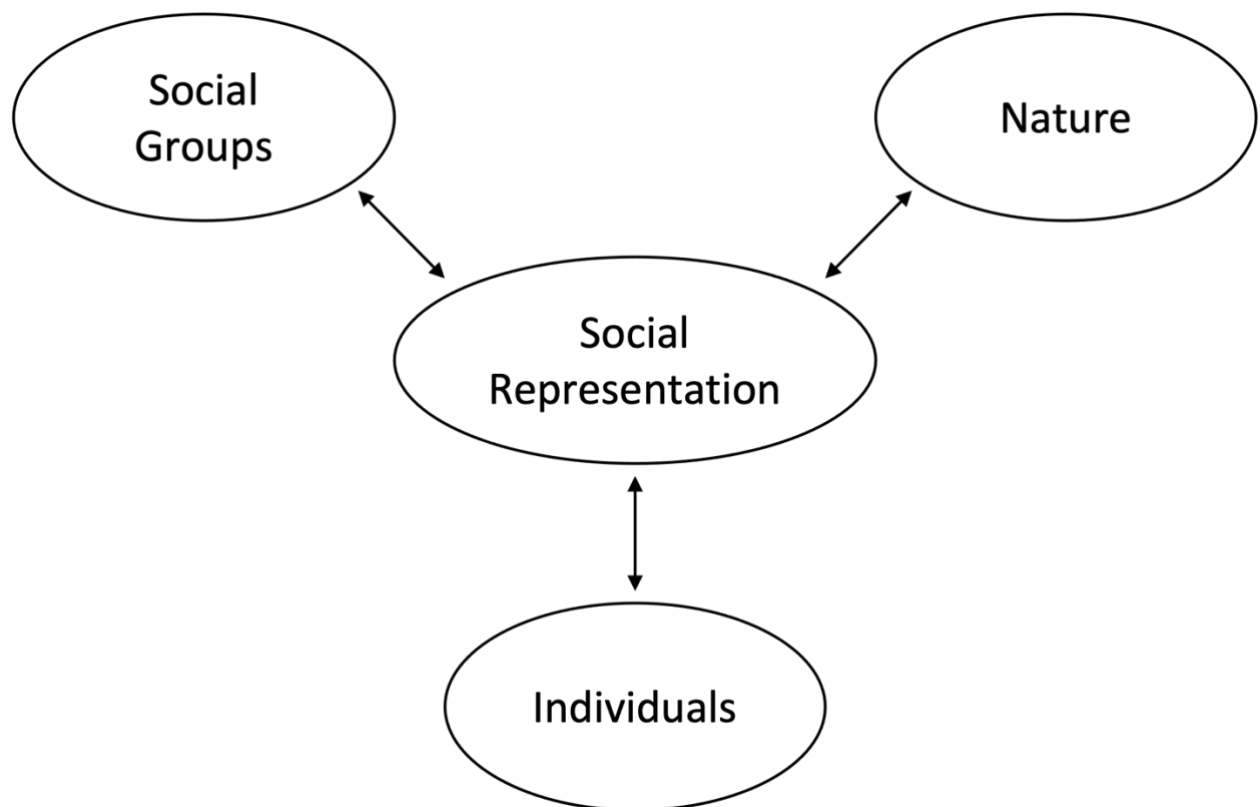


Figure 4: Model representing the construction of social representations of nature, because of the interactions between individuals, social groups they are a part of and the physical nature around them. (Taken from Buija, 2008, p.45).

The Social Representations theory looks to construct links with ideologies, symbolic systems, and attitudes, allowing for it to be interdisciplinary in nature and applicable to all of the social sciences (Rateau et al., 2012). Adding to SRT’s interdisciplinary nature, the theory is also flexible, allowing for adaptations to better match different research fields, as well as the incorporation of other theories. Because of the flexibility and the widespread applicability of the SRT, a multitude of models have been created. Of these, two main

models have emerged as being most dominate in the use for wildlife management studies—Sociogenetic and Structural.

#### Sociogenetic Model

The Sociogenetic model is most closely aligned with the origins of Social Representation. The establishment of representations is a result of the presence of two main processes, objectification, and anchoring (Rateau et al., 2012). The concept of objectification refers to the process in which an object, through communication, will be simplified and distilled down to specific characteristics. Within a group, social setting, social groups will select and extract different characteristics which are better aligned with their individual identities and perceptions. The characteristics selected are referred to be Mosocovi (1962) as the "Figurative core". The concept of anchoring is the final stage in the objectification process, as it looked to establish a place for the object within pre-existing beliefs at both the individual and social group level (Moscovici, 1962; Rateau et al., 2012). The object's location and representation will also be dependent on the social group, with all social groups assigning their own meanings and interpretations. The concept of anchoring is also not typically a smooth process, with points of conflict arising between new ideas and pre-existing systems of norms and values.

#### Structural Model

Building into this framework, are the ideas proposed by Abric (1993) which propose that social representations are built upon two systems—the Central/Core and the Peripheral. The central system is defined as being stable, coherent, consensual and is historically marked, meaning that the views held within system are accepted by the whole society and are often viewed as being rigid. The peripheral system contrasts the core system, in that is fluid and allows the existence of individual thoughts and experiences. The internal and central representations provided two main functions, to generate meaning, and to organize (Abric, 1993; Rateau et al., 2012). Regarding being able to generate meaning, the central core allows for other elements of the representation to obtain meaning from

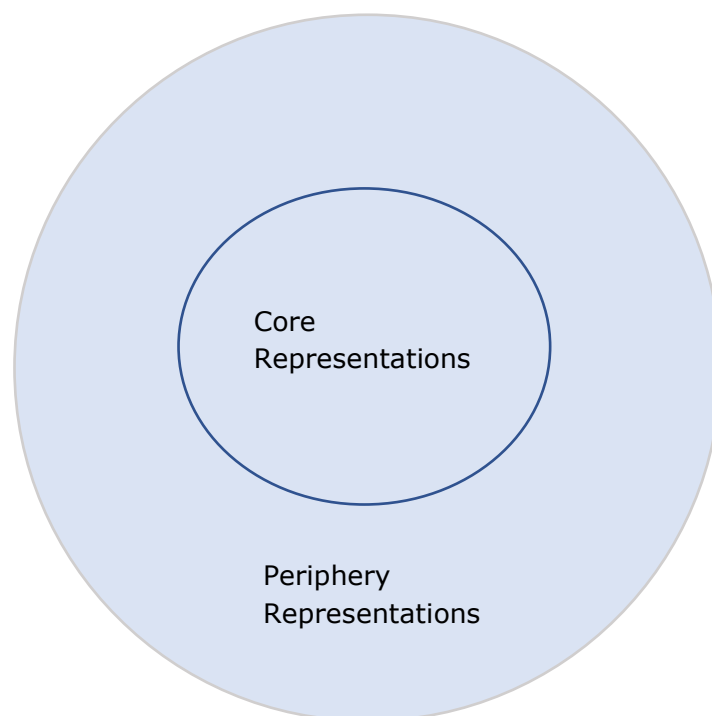


Figure 5: Core and Peripheral Model, as depicted by (Abric, 1993)



individuals. In an organizational sense, the central core acts as a building block in which other representational elements can be arranged. With the peripheral system, perspectives are more flexible, and allow for the integration of individual experience and perspectives. This flexibility allows the ability for adaptation to better fit various social contexts (Rateau et al., 2012). Peripheral systems are more sensitive to change around it, allowing for it to act as a sort of buffer to the central system, protecting it from undergoing rapid change brought on from the introduction of new ideas or ideologies (Abric, 1993). In this way, this layer can filter and absorb new information, allowing for a more gradual evolution of perceptions held in the core layer. The peripheral layer also serves a third function, allowing for the individualization of a representation. This allows for the individuals to incorporate personal experiences around a shared central core.

## 3.2. Social Representation of Nature

### 3.2.1. Human Perceptions Towards Wildlife

Human-wildlife interactions are another avenue to analyze interactions and perceptions towards nature. As with social representations towards nature being reflective of cultural backgrounds, individual perceptions towards wildlife are also a reflection of their cultural and social group. When looking at the social representations of wildlife, a clear divide between rural and urban social groups has existed. Within rural, more agriculturally driven communities, the perception towards wildlife has often been perceived as binary—positive or negative, for or against, looking more at material impacts of wildlife on humans, than at non-tangible aspects (Skogen et al., 2019). Within Western societies, as ideas have flowed from the urban setting into the rural, the views of wildlife as being a threat and problematic have begun evolving, with symbolic notions of naturalness and freedom starting to emerge as being dominant (O'Rourke, 2000). Despite this evolution, representations regarding large carnivores have faced significantly greater levels of resistance. Partially, this resistance comes more as a clash between rural and urban social groups, with rural social groups viewing initiatives aimed at protecting large carnivore species as being a threat towards their communities and their wellbeing (Ghosal et al., 2015).

The cultural landscape of the study area is an additional, important consideration needed when looking at representations of wildlife (Figari & Skogen, 2011; Skogen et al., 2019). Using large carnivores as an example, within western society their presence has been the source of significant conflict. This can be compared to other regions such as India, where despite human-wildlife conflicts with tigers are ever increasing, the management response has been one aimed more at achieving coexistence (Aiyadurai, 2016; Koprina, 2015). Ghosal et al. (2015) highlighted the need for the incorporation of cultural landscapes when developing social representations on wildlife. In the paper, there is a focus on how the cultural representations towards carnivores, shape communities' tolerances towards conflict. This is exemplified with tribal representation of leopards as being deities for the local community and are viewed as an integral of the landscape and society (Ghosal et al., 2015). Members of these communities recognize that depredation events from predators are not done out of spite towards the community, and as long as there is no direct harm to humans, they are tolerated.

### 3.2.3. Social Representations Towards Re-Introduced and Rewilded Animals

As society learns more about ecology and the role of species in the management of ecosystems, there has been an increasing focus on the reintroduction of species back into ecosystems. While there is a multitude of reasons behind a species removal from an ecosystem—poor management decisions, over-hunting, cultural fears, land use change, and habitat loss all being, benefits ranging from biodiversity, population management, as well as cultural significance are all contributing factors when it comes to a species being reintroduced. Benefits of species reintroduction towards ecosystem health has been clearly observed in Yellowstone National Park in Wyoming, USA, with the reintroduction of wolves (Arts et al., 2016; Carey, 2016). The reintroduction of wolves into the Yellowstone ecosystem worked to help limit the ungulate population that was residing within the national park, which in turn benefited willows and other plants which had been heavily grazed. Reintroduced animals can bring various benefits with their introduction. However, the concept still remains a contentious issue, as the extent in which different stakeholders will perceive the benefits will vary dramatically (Arts et al., 2016). These opinions are largely derived from the social representations held by the different social groups. Going back to the wolf reintroduction into Yellowstone, social groups such as farmers and hunters were against the reintroduction as they perceived that bring wolves back would increase the amount of livestock depredation as well as lower the amount of huntable game. On the other side, from the biologist and ecosystem systems perspective the reintroduction was very beneficial.

In recent years, there has also seen emerging popularity of the term of "Rewilding." The term originates from the early 1990s, and has the goal of creating core wilderness areas within North American which would be void of human activity (Jørgensen, 2015). Since then, the term has evolved to represent the action of erasing human presence from the land, restoring both flora and fauna to pre-human. There has been an increased focus on bring back Pleistocene mega-fauna (11,600 – 2.6 million years ago), a time frame which coincides with this historical time frame of muskoxen in Norway (Rangbru & Seljevoll, 2017).

The adoption of rewilding as a concept within Western cultures has been faced with a mixed reaction. For example, within many European countries, rewilding has been more readily adopted. Whereas within the United States, rewilding efforts have faced more opposition. Carey (2016) describes this phenomenon as a "Wilderness Paradox", where you have a nation—the United State of America, who has the space and the cultural beliefs of leave no impact, struggle to properly implement rewilding policies. This is contrasted by Europe, where there is no true wilderness, yet people are more willing to share the landscape with reintroduced species, particularly when it comes to large carnivores.

With reintroduced species, often they are held and managed within a delineated geographic area. These areas are usually small in size and act as a testing ground for determining the success and impacts of the reintroduction. During this time, the species often receives extensive management oversight from government officials. When looking at the Muskox in Dovrefjell-Sundsfjella National Park, many of the key components of constitutes rewilding can be found.

### 3.2.4. Social Representations of Wolves

When looking at the social representation of wildlife, the study of social representations of wolves has emerged as one of the most dominant discourses. The wolf has long been an animal which has been at the center of western society, holding both a central and symbolic position in the perceptions of nature and wildlife (Bjerke et al., 1998). Overall, the wolf has been represented as a threat to the safety of both humans and livestock, as well as being a block to progress and modernization (Bjerke et al., 1998; Figari & Skogen, 2011). On a more symbolic level, the wolf's image has largely been constructed based on folklore and myths, with numerous written works being passed through generations describing wolves and wolf-like mythical animals as bloodthirsty, tricky, and evil beasts, that is always waiting for the opportunity prey on humans (Fogleman, 1989). Within Europe and as well colonized North America, the fear and persecution of wolves for numerous centuries has led to population numbers of wolves to drop below critical level in many wilderness areas.

In more recent times, the representations of wolves have evolved, with knowledge and recognition of their importance to ecosystem health becoming more common. During this time, there has been an emergence of a rural and urban divide. To rural populations, wolves still present a significant threat to the wellbeing of livestock, which in turn is directly related to the wellbeing of farmer's livelihoods. This is contrasted by urban populations, often removed from having direct interactions with wolves, who are in support of increased conservation efforts, as well as increased population numbers for wolves (Dahlström, 2009). By looking at this urban-rural divide, helps to illustrate the impact of socio-economic factors in determining individuals' attitudes, views, and representations towards wildlife. In many cases, rural and agrarian societies have spent generations working to remove what they have deemed to be "nuisance animals" from their environment, seeing the reintroduction and protections brought onto these species also can result in rising tensions between different stakeholder groups.

### 3.3. Wildlife Tourism

Over the last century the concept of tourism has been an ever-increasing field, with the more specific concept of wildlife-based tourism seeing a dramatic increase in popularity. Wildlife-based tourism, as defined by Newsome et al. (2005), is tourism which has the primary goal of experiencing wildlife in their natural setting or environment. Within wildlife tourism, there are two main subsections or forms: consumptive, and non-consumptive. Consumptive forms can include activities such as hunting, fishing, and zoo tourism, all of which involve the removal or harvesting of wildlife from their habitat. Non-consumptive forms, also referred to as wildlife viewing tourism, focus on the peoples' motivation to photograph and observe wildlife in their natural habitat, and have the result of the wildlife remaining in the habitat after the activity is finished. This form of tourism has seen the highest rate of growth out of the two subsections (Dybsand & Fredman, 2020). As a result of this growth, there has been increasing levels of academic study on the subject area, in addition greater awareness of potential ethical implications resulting from the increased human presence. Wildlife tourism as a whole has the potential to present a variety of benefits for the local, and often rural communities through the economic stimulation and enhanced awareness of the importance of wildlife conservation, for both tourists and local stakeholders (Aquino et al., 2021).

### 3.3.1 Wildlife Tourism Paradox and Role of Sustainable Tourism

The concepts of wildlife based tourism and wildlife conservation have the potential for the development of a symbiotic relationship: visitors gain satisfaction from visiting natural areas and engaging with wildlife, while managers are able to generate support from government and local people along with financial revenues which is able to be fed back into conservation efforts of the protected land (Wolf et al., 2019). This relationship has the potential of creating a feedback loop which can provide long term mutual benefits for all parties involved. However, there is a so-called dark side of allowing and encouraging people to visit sensitive areas, as increased visitation can lead to habitat degradation and wildlife disturbances of important feeding, migration, and breeding areas (Wolf et al., 2019). It is within this, exists a paradoxical situation, successful wildlife and nature-based tourism is dependent upon the existence pristine environments, while at the same time it degrades the ecosystem upon which it is based (Williams & Ponsford, 2009). This type of paradox is commonly referred to as a "resource" or "tourism" paradox, as the industry destroys the resource which it is reliant upon for its success (Arikan et al., 2016). The term "Tourism Paradox" is also synonymous with unsustainable tourism. In addition to the direct environmental impact of tourism on local ecosystems, there is also broader, global scaled problems created by emissions generated as tourists travel from around the world to come visit national parks (Bell, 2011; Williams & Ponsford, 2009; Wolf et al., 2019). As a result, this raises questions about the overall sustainability of tourism development.

A potential solution to address the impacts of tourism on ecosystem is to identify the balancing point, where the benefits of tourism are balanced with ecologically acceptable levels of environmental degradation (Wolf et al., 2019). This could be approached through a variety of different means such as season closures of landscapes or the intensification of tourism in areas which are of lower environmental sensitivity, in attempt to minimize human activity in areas which are more sensitive. In addition to these solutions, the adoption of more sustainable tourism practices is also a valid solution to help mitigate the impacts of nature tourism on ecosystems. Changes in behaviours and practices can be adopted by all stakeholder groups—visitors, tour operators and park managers, and coordinated efforts are needed in order to be able to achieve sustainability within nature-based tourism (Williams & Ponsford, 2009).

### 3.3.2 Wildlife Viewing Tourism

One of the main benefits of Wildlife Viewing Tourism is the ability to ideally minimize the net impacts on the wildlife. However, the increasing popularity of this tourism form also creates a significant management issue, where poor management strategies can result in severe negative impacts on native species, such as behavioral alterations, displacement, stress, and habitat degradation (Green & Giese, 2004). On the other hand, successful adoption of management strategies can result in a sustainable tourism which is mutually beneficial for both local economies and native wildlife species. As a result of both the impacts and benefits of wildlife tourism, there is a critical need for the development of responsible and sustainable management plans (Aquino et al., 2021; Breiby et al., 2022).

This need for sustainability within management plans is very common and dominate theme within much of the literature published on wildlife tourism. The concept of sustainable tourism is a form of tourism which has been developed and managed in way and scale that it allows for economic viability over an indefinite period of time, while not undermining the physical and human environments which supports it (Ham & Weiler,

2012). This need for not undermining the physical environmental is vital for ensuring long lasting sustainable wildlife tourism.

### 3.3.3 Application of Social Representations Theory within Wildlife Viewing Tourism

The theoretical framework of social representations has also been adapted in application of developing wildlife tourism management plans. According to Aquino et al. (2021), the value of SRT comes from its ability to generate an enhanced understanding of new meanings and value. constructed as social knowledge, while also recognizing that different social groups have unique and complex systems which are used to construct their own understandings of concepts. This can have an end-result of developing several different ways of understanding certain concepts. This can be exemplified from a wildlife management perspective with a decision to implement seasonal land closures which may generate negative connotations from locals due to fears of the permanent loss of land rights and changing cultural traditions. While decision behind these policies might be made for the collective and ecosystem's wellbeing, negative interpretations could be created as a result of the stakeholders' history or understandings of the concept (Aquino et al., 2021). The condensation and collection of social meanings and values towards a specific topic can lead to local stakeholders feeling more connected and invested with the developed management plans and can strength the connection with the bond between nature and local identity.

The concept of sustainable tourism can also be achieved through the adoption of SRT into the development of management plans. The definition and understanding of what is sustainable tourism and how it can be achieved is both subjective and value laden, and its interpretation is unique to different social groups (Moscardo & Murphy, 2014). Top-down, government and external expert driven management decisions have historically ignored the voices of stakeholders and residents (Aquino et al., 2021; Moscardo & Murphy, 2014). The use of SRT has the potential better understand various perspectives and viewpoints of specific issues and concepts, allowing for greater efficiency, transparency, and clearer communication with local stakeholders (Aquino et al., 2021).

## 4. Methodology

The primary objective of this project is to determine people's perspectives of the muskox, and how this perspective influences the management policy created to manage the population in Dovrefjell-Sunndallsfjella Nasjonal Park. Naturally, qualitative methods would lend themselves very well towards developing this understanding. The usage of qualitative methods within geographic research has become increasingly popular, especially due to the variety of methods such as positivism, ethnomethodology, and ethnography that can be adapted (Patton, 1999). While all these approaches can be adopted into qualitative studies, there is also issues regarding how the quality and credibility of the data intersects with the audience, study population, and the intended research objectives. Credibility issues can stem from the techniques used in data collection, the credibility of the researcher, and overall value placed upon qualitative inquiry (Patton, 1999). In effort of to bring greater validity to the credibility and quality of qualitative analysis the adoption of other methodologies, known as mixed methods, is a well-suited solution. The mixed methods approach to research look to blend both "soft" interview-derived qualitative data with "hard" numbers and statistics determined quantitative data (Winchester, 1999). The adoption of blending methods together has gained increasing traction in the geographic realm, using the dualistic nature to paint a more comprehensive picture of the intended study. Mixed methods can be further subdivided into five methodological designs: Subsequential studies, Parallel/simultaneous studies, equivalent status studies, dominate/less dominate studies, and multilevel use of approaches (Tashakkori & Creswell, 2007). For this report, multiple data collection methods have been chosen, including quantitative-focused questionnaires, qualitative-focused interviews, and content analysis. With these methods, the qualitative interviews will be used as the primary data source. All three of these methodologies can be incorporated into the social representation framework, as was demonstrated by Figari and Skogen (2011). Content analysis, inspired by discourse analysis, will be used in the analysis of academic texts and governmental texts related to muskox populations in Canada and Norway. The quantitative approach will be taken using a questionnaire, designed as developing a general understanding of people's perceptions of the Muskox and how the animal relates to surroundings in Norway. Lastly, a qualitative approach is taken through interviews conducted with various stakeholders related to the muskox (government officials, tour/business operators, and the public). The methodology behind each of these research forms will be found lower in the report.

While each of these study designs are distinct in the way quantitative and qualitative data is used, they all based on the use of triangulation, which is the use of multiple methods or data sources to develop a comprehensive understanding (Carter et al., 2014; Patton, 1999). The concept of triangulation has its roots in cartography and land surveying, where if know your location towards multiple points of reference can bring about greater accuracy, than if you only use one point of reference (Patton, 1999). The data collection methods selected for this research project tie in well with both Method and Theory triangulation concepts (Carter et al., 2014). Due to the scope and scale of the project, the use of data source and investigator are not well suited for the project.

### 4.1 Thematic Analysis - Creation of an Analytical Lens

The concept of "Discourse Analysis" is an interdisciplinary term, with its approaches and methodologies changing depending on the field of study and the framework in which it is being used (Graham, 2005). While usages and frameworks may change based on the

research field, discourse analysis as a tool is used to analyse and interoperate various bodies of text and literature, in attempt to identify and understand subject materials importance (Jäger & Maier, 2009; Waite, 2016). Within more linguistics-based fields, the concept of discourse investigates developing understandings regarding the interconnections contained within passages of connected text. An approach associated more with this aspect of discourse analysis is semiology, which is the study of symbols. While discourse analysis can be a useful tool in understanding texts, it is also a very broad approach, and with many different approaches which could be used. Stemming from discourse analysis, is the concept of "Thematic Analysis". This approach looks to focus on the categorization of themes which are present within the data (Alhojailan, 2012). As a result, the use of thematic analysis is better suited for this project.

For this study, a thematic analysis study was conducted to investigate how muskoxen are represented and perceived in Canada. Canada was selected as a country of study due to being one of only two countries (Greenland the other), which has endemic herds of muskoxen. The use of Canada as a study location allows for a comparison of the perceptions of endemic and introduced species. By conducting a thematic analysis between endemic and introduced species, there is also the potential to uncover differences in how the animal is perceived and valued by local populations. Due to the political landscape of Canada, documents produced at various levels of government (federally, territorially, and provincially) will all be included in the analysis.

Source materials can take a variety of textual forms, from academic literature, photographs, official government documents, and websites (Waite, 2016). While there is a seemingly endless list of text types that could be used, the selection of each type should be aligned with the overall research objective. For the purposes of this study, the thematic analysis will primarily focus on both Government published management plans and academic published literature. The use of multiple texts, as well as a variety of textual formats, is important from the aspect of creating Intertextuality. The concept of intertextuality focuses on the connections and relationships between various texts, and that knowledge can be found in the linkages between texts, rather than being held within a single text (Fairclough, 1992). To help aid in highlighting the intertextuality within texts the use of computer assisted qualitative data analysis software (CAQDAS) was used to efficiently and cleanly, highlight shared themes and codes held between different texts. The software used in conducting the discourse analyses was NVIVO, due to the software's ability to process various formats of data (text, images, ect.) (Zamawe, 2015).

When conducting the coding process on the Canadian management documents, four main themes will be used. These themes: Tourism, Cultural, Political animal, and Symbol of the local landscape, are derived from the finding of the social representation categories identified when looking at the muskox population in Norway. By using similar categories, it will be possible to provide a more direct comparison between the two countries.

## 4.2 Questionnaire

Questionnaires have become one of the most widely used methods for collecting data, and within the geographic research realm are useful in gathering information regarding peoples' behaviours, perspectives, and values using standardized, and structured questions which can be distributed to a sample population (McGuirk & O'Neill, 2016; Rowley, 2014). Often the questions asked on questionnaires are aimed at collecting

quantitative data, with the goal of returning sample numbers or the frequency of occurrences of certain attitudes, opinions, process, or behaviours. To obtain this information, the use of closed questions—list, category, or ranking questions, are ideal as they provide the researcher short, concise, and quantifiable responses (Rowley). On the other side, open ended questions are designed to allow respondents to provide short comments, or more personalized response which might not fit the options available with closed questions. The ability of to ask both open and closed questions which can gather both quantitative and qualitative data, lends the use of questionnaires towards mixed methods. Regardless of questionnaire format, all questions are standardized and formalized, and are distributed towards a sample population (McGuirk & O'Neill, 2016). The format and distribution of the questionnaire can either be a physical questionnaire that participants can fill out, or more commonly in a digital format.

#### 4.2.1 Questionnaire Development

The use of a well-designed questionnaire containing well-developed and effectively organized questions helps to ensure the results from the questionnaire can provide insight and provide answers towards the research objectives (McGuirk & O'Neill, 2016). With questionnaires, there are five main categories of questions: Attributes—demographics, Behaviour—what people do, Knowledge—what respondents know about the topic, Beliefs—What respondents view as true or false, and Attitudes—what respondents view as desirable or what should happen (De Vaus & de Vaus, 2013; Greenfield & Greener, 2016). When developing the questionnaire, questions relating to all five of these categories will be used. In addition to the questions that are used, the order and design of the questionnaire is also an important consideration (De Vaus & de Vaus, 2013; McGuirk & O'Neill, 2016). The ordering of questions can influence both the way people interpret the questions as well the question response rate. The questionnaire question outline can be found in Appendix 5. When designing the questionnaires, questions were grouped in relation to both question category, as well as with other questions of a similar theme. As outlined by De Vaus, questions should start as generic, easy to answer, factual and concrete, as it allows the respondent to warm up to answering the questions.

To further understand how and if respondents' backgrounds influence their perception of nature and the muskox population, an adapted recreation experience preference scales (hereafter: REP-scale) was incorporated. The original REP-scales developed by Manfredo et al. (1996), contained 19 domain groupings, with the majority also containing multiple sub-domains. Inspired by Aasetre et al. (2016) and Kleiven (2009), a selection of REP-scale concepts was selected, and phrased into answers to individuals' motivations to visit nature. to measure motivation in visiting nature areas. The selected domains and subdomains were "Enjoy Nature" (Scenery, General Nature Experience), "Interspection" (Spiritual), "Physical Fitness", and "Learning" (Exploration) (Manfredo et al., 1996).

To determine people's perception and association with the muskox, and other native species to Dovrefjell-Sundsfjella Nasjonal Park, Likert-type scales were used. The Likert-type scale is a useful tool of measurement as it aims to measure both the direction (agree/disagree) as well as intensity (strongly/not) of attitudes or beliefs (Albaum, 1997). While it does not need to be measured as at an integer level, the Likert scales created for this project followed a 10-point integer scale anchored on either side by "Not Strongly" and "Very Strongly". The use of a 10-point scale allows respondents to provide answers with greater granularity. The selected animals—Muskox, Reindeer, Wolverine, and Arctic fox, were chosen from a publication by the Dovrefjell National Park of species



native to the national park (Miljødirektoratet, 2014). Both the reindeer and the wolverine are native species that have existed in the park for a long time, while the muskox and the arctic foxes are both results of reintroduction into the park.

The usage of open-ended questions allows for respondents to not be constrained to fitting their feelings to set answers, as a result this question type is ideal in asking respondents to express how they feel about the muskox, and what it symbolises to them on personal levels. Moving beyond these open questions, respondents were asked if they had gone on a "official/organized muskox safari". For respondents who had not been on a safari, this was the end of the questionnaire. If respondents had gone on an organized safari, a series of additional open and closed ended questions were made available. The purpose of this series of questions was to gain a better understanding of people's motivations to visit the park, and how organized tours can influence how people perceive the muskox.

When designing and creating questions, it is important to consider the intended respondents, and to use language that is easily readable and interpretable to ensure that the answers to questions are in lined with the research expectations (McGuirk & O'Neill, 2016). This project aims to understand the perspectives at the local, national, and international level, with respondents primarily consisting of active or historic visitors to the Dovrefjell-Sunndalsfjell Nasjonal Park. For the questions to accessed and interpreted at the different geographics scales, questionnaires were written in both English and Norwegian. As the researcher is a non-native Norwegian speaker, the Norwegian questionnaire was created with assistance from native Norwegian speakers. The usage of native Norwegian speakers as opposed to using an online, digital translator helps to mitigate translational errors which could result in a loss of meaning and context. Bradley (Bradley, 1994) outlines four approaches when translating questionnaires: Individual Translator, Committee Approach, Back-translation and Retranslation, and the Mixed Methods Approach. While the single translator approach may be the least resource intensive approach as only one individual is needed, that individual must fully understand the questionnaire, the intentions behind question design, and be able to construct new versions of questions. Due to these requirements, it is rare to find all these skills within a single individual. This is where the Committee Approach can be more successful, as it utilizes multiple translations and then determines which translation would be most appropriate (Bradley, 1994). In Norway, a country where there are wide-ranging regional dialects, the usage of translators from different regions of the country helped to ensure the language used, both in writing and interpreting the responses, was "common" and free of regional dialect.

The questionnaires used in this project were developed using the University of Oslo's "Nettskjema" survey tool, due to the applications ease of use (for both researcher and participant), accessibility with various forms of technology (computer, mobile phone, or tablet), and lastly its compatibility with Norwegian Privacy laws (University of Oslo, 2018). The webtool also allows for the ability to add visibility conditions to questions which are dependent on answers to earlier questions.

#### 4.2.2 Questionnaire Distribution

As social-interaction dynamics have evolved over time and questionnaire response rates and quality have experienced a significant drop, Murphy (2014) highlights how social media can be used an effective tool for survey-driven research. The usage of social

media has grown rapidly over the 20 years, with networks such as Facebook and Twitter starting to become further integrated into our everyday life (Murphy et al., 2014). This integration into everyday life has allowed for the development of a sense of online community, where groups of people of shared or similar interest are able to interact with each other. It is within these groups that the questionnaire was distributed.

The use of social media also allows for the distribution of surveys to communities where it would be more difficult or impractical to reach for a variety of reasons, in the case of this of project due to language and geographic constraints (Dusek et al., 2015). The use of this distribution method is also conducive with snowball sampling—a common sampling methodology where participants are not directly contacted but rather connected to the project from other participants (Leighton et al., 2021). As outlined by Leighton (2021), the first steps in this methodology involve identifying the groups on social media that are most closely aligned with the target population, resulting in three groups being selected—“På tur i Oppdal”, “Moskus på Dovrefjell”, and “Hiking Sweden & Norway”, combining for approximately 6,400 members. With this study, there was a purposeful decision to sample people who have interacted with Norwegian national parks, or held an interest in outdoor, nature-based activities. As a result of selecting a targeted population based on these characteristics, the sampling that was conducted would classify as purposeful sampling (Dunn, 2016; Dusek et al., 2015). While the questionnaire is posted in these group forums, there is opportunity for group members to further share the questionnaire to their own personal feeds, along with the ability to tag “friends” who they feel might be interested in also participating the questionnaire. Posts made on each of the groups, both in Norwegian and English, providing a brief explanation of the purpose of the project and goals hoping to be achieved by the questionnaire.

## 4.3 Interviews

The use of interviews within qualitative research allows for more in-depth data to be collected than would be possible through other methods, in addition to being able to investigate and further expand on more complex concepts and feelings (Dunn, 2016). Interviews also allow for the inclusion of more natural, developed, and free-flowing thoughts and ideas than what is typically generated from more rigid questionnaire answers.

### 4.3.1 Interview Selection process:

Participant selection for interviews as broken into three separate participant categories: Guides/other commercial enterprises, Government Officials, and the public. Guiding operations were reached out to through cold emails. This was the same process used with the recruitment of government officials, with emails being sent to the different governmental offices involved in the management of the muskox: Trøndelag County Governor (Statsforvalteren i Trøndelag), Norwegian Environmental Agency (Statens naturoppsyn), and the Dovrefjell Nasjonal Park Board (Dovrefjell nasjonalparkstyre). During the questionnaire phase of the fieldwork, the questionnaire ended with the option for participants to volunteer to be involved in an additional follow-up interview. From the 70 respondents to the questionnaire, 22 people agreed for the addition interview and 8 interviews being able to be setup. In combination of the three different categories, there was a total of 13 interviews conducted.

Table 1: Composition of interview participants.

Group	Number
Norwegian Visitors	7
Locals – Visitors which are residents within the communities surrounding Dovrefjell-Sunndalsfjella National Park	2
Foreign Visitors	3
Muskox Guides/ Service Providers	2
Managers	2
<b>Total</b>	<b>13</b>

#### 4.3.2 Interview Guide Development and Interview Procedures

As there were three different interview groups, three separate interview guides were created. While the interviews were conducted following a semi-structured format, the use of interview guides help to provide a general structure for conducting the interview, as well as acting as memory aid to ensure the interview covers all of the desired topics while obtaining the desired level of detail, achieved through the development of potential sub-questions within each topic (Dunn, 2016; Magnusson & Marecek, 2015). The use of a semi-structured interview format allows for a more natural flow of conversation, permitting for the occurrence of side-stories, which could provide greater insight into deeper thoughts.

In the case of the interview guide developed for questionnaire respondents, questions and talking points were largely designed to expand upon questions asked on the questionnaire, particularly those pertaining to the perception of the muskox, national park, and nature. The guide developed for the Muskox Safari operators focused on the commercial side of muskoxen, looking into the importance of the animal for their operation, customer expectations, and how management regulations influence their business practices. Finally, the interview guide for the government officials looked to focus on the creation and motivation behind the development of management policy pertaining to the muskoxen. In the cases of both Muskox Safari operators and government officials, discussion topics were also created which were more aimed at the participants own personal feelings towards the muskox population and their relationship with Dovrefjell Nasjonalpark.

All interviews were conducted in English and held digitally using the videoconferencing app Zoom, on account of interview participants being in various geographical locations around Norway, as well due to health safety precautions relating to the Coronavirus pandemic. The usage of Zoom also presents other benefits for qualitative data collection due to its relative ease of use, cost-effectiveness, data management features and data security (Archibald et al., 2019; Zoom Video Communications Inc, 2016). Zoom also allows for the interview to be recorded and directly saved onto the local hard drive. This offers two key benefits, the first being the ability for recording the interview feel more like a natural conversation as the interviewer is not also having to focus on writing notes

on the responses gave by the respondent (Dunn, 2016). The second benefit comes a data security point of view, as files are stored locally and not in a third-party location, lowering the possibility of the files being lost, corrupted, or leaked (Archibald et al., 2019). After the interview, the recorded audio file was then transcribed into a textual format which was used to facilitate analysis (Dunn, 2016).

### 4.3.3 Interview Coding

The use of coding is a method within qualitative research aiming to create meaning out of various forms of qualitative text, often done through distilling large volumes of text into more distinct themes (Cope, 2016). There are multiple ways in which a researcher can conducting coding, the use of analytic codes—codes which reflect specific themes identified by the researcher, is the most applicable method for this research project, as it looks to takes themes seen with other animals and applies them to the how muskoxen are perceived. To aid in the coding process, the CAQDAS software NVIVO was again utilized, with passages of transcribed interview text were highlighted and categorized based on the themes held within the passages. Based on the literature and theoretical framework created from the discourses analysis conducted on Wolves, Whales, and Wild Boar, four main codes/concepts were identified: Political, Symbolic/Iconic, Invasive, and Tourist Attraction.

## 4.4 Ethics and Methodological reflections

As with all research methods, there are many ethical considerations which need to be acknowledged when looking to find the correct way to communicate with participants (Dowling, 2016). Qualitative methods are even more interwoven with the fabric of society, and the outcomes can be significant in their influence on society. The use of Critical Reflexivity is a potential solution for navigating through issues which may arise from power relations, overall research ethics, and the objectivity, subjectivity, and intersubjectivity associated with qualitative data collection. In addition to the discussing how ethical issues will be examined, the impact of COVID-19 also needs to be reflected upon research methodology.

### 4.4.1 Research Ethics

Research Ethics is a broad topic, largely focuses on the conduct of researchers, and their responsibilities and obligations to those involved in the research being conducted (Dowling, 2016). Before research will be conducted, the research methodology must first be approved by the NTNU ethics committee, which is primarily concerned with how the methodology will look to deal with matters of privacy, consent, and harm (Dowling, 2016).

The first concern of protecting participants privacy is crucial as to conduct qualitative research, the researcher must invade the privacy of the interviewee. To secure the privacy of individuals, personal information that is not required for conducting the research will be removed from the data set. In addition to cleaning the data, all data will be stored on an external secured hard drive which will further help to prevent the data from being stolen.

The second concern raised by Dowling is the concept of Informed Consent. The concept of informed consent means that participants in both the questionnaire and the interviews are informed that they are participating in a research project. Before both questionnaire and interviews are conducted participants will be informed of research project and will also be informed of the goals of the research, through textual means for the

questionnaire and verbally for the interview. During the interview process, the participant will also be asked to give permission to be recorded, so that the interview could be transcribed, and analyzed later.

Lastly, Dowling outlines the role the researcher should play in preventing participants from being put into a place of harm, be it physical or social (Dowling, 2016). Social harm can be created if individuals hold differing opinions on how the muskox should be managed, or if the animal should exist within the park at all. To mitigate this risk, the identities of participants will be removed so as not to expose them to the general public.

#### 4.4.2. Ethical Considerations on using social media as a research tool

The usage of social media for the distribution of questionnaire can allow for “snowball sampling” as described by Dusek et al. (2015), it can also result in the creation of a convenience sample. This form of sampling only includes members of a targeted population which meets a certain practical criteria, such as availability at a given time or having strong motivations regarding the subject material (Etikan et al., 2016). As a result of this, the sample population is regarded as being a non-random sample and may not be reflective of an entire population.

The creation of bias also exists with the usage of social media and online means to distribute questionnaires to a population. Self-selected opinion polls are example of this, which are characterized with the researcher not having control over the sample selection, and the selection of the respondents was not based on scientific methods (Duda & Nobile, 2010). Participant selection can be based from, chance visits the web page, persuaded by monetary or other incentives, have a vested interest in the results or want to influence the findings or they were brought to the site from others (Duda & Nobile, 2010). It is the third point which deals the most the creation of bias in the sample, only highly opinionated individuals could dominate the results section, overshadowing more moderate or opposite views. As a result of this is bias, the emphasis placed on the findings will be reduced, with greater emphasis being placed on the interview results.

#### 4.4.3 Power Relations, Objectivity, Subjectivity, and Intersubjectivity

The nature of qualitative research, as described by Dowling (2016), is interwoven with relations of power within society. Due to this interwoven nature, it is impossible for power relations to be completely avoided, so researchers must make the effort to mitigate the effects they have as much as possible. Within this research objective, there is a potential for the creation of power relations, as a researcher might be perceived as being a threat towards changing the status quo. There is also the risk of creating power imbalances because of the researcher being foreign, and the majority of the interview participants being native Norwegians.

The concept of subjectivity is often associated with qualitative data, as methods involve social interactions, which match with the concepts use of personal opinion and characteristics (Dowling, 2016). The way a researcher is perceived by interviewees will influence what and how the information will be talked about. If the researcher is considered an “outsider” to the study group, the amount of information is likely to be less, as people generally are more restrictive in sharing their feelings outside of their social circles. Being foreign, on the researcher side, personal experience and views make it impossible for the researcher to completely separate themselves from object of the research (Dowling, 2016). Being aware of your own involvement and influence at the

beginning is a good start in attempt to minimise the impact of both subjectivity and intersubjectivity.

#### 4.4.4 Critical Reflexivity

The concept of critical reflexivity looks to embrace subjective understandings and to better acknowledge self-biases (Cunliffe, 2004). It has also been described as a process of constant scrutiny of both the self (the researcher) and of the research process (Dowling, 2016). Dowling (2016) recommends the use of a research diary, as a place to record the researcher's thoughts on the research process and its role with a social context. Using this tool of self-reflection has the potential to bring about greater data integrity, in addition to bringing about greater awareness of ethical complications that might arise. It is also a useful tool in addressing problems of subjectivity and power imbalances (Dowling, 2016).

#### 4.4.5 COVID-19

Due to the current global pandemic of COVID-19, additional precautions need to be taken when conducting interviews and engaging with the public. Due to the rapidly developing nature of the disease, behaviours and interactions that are currently permitted by the local government, may not be allowed in the future. Also, the public's precautions and fears regarding the spread of COVID-19, may also be more hesitant to engage in conversation with people outside of their cohort or bubble. While the planned methodology for this research is inherently "Covid safe", in that much of the interaction between the researcher and participant is digital, the pandemic has also resulted in the disturbances in the lack of ability to travel and gain in-person experience through interacting with park visitors in the physical setting. These interactions could prevent the researcher from observing non-verbal feelings of visitors.

# 5. Results

## 5.1. Questionnaire Response

### 5.1.1 Sociodemographic Background

The incorporation of sociodemographic factors is important when looking at qualitative data, as it helps to frame and provide context behind the responses. The distributed questionnaire resulted in a total of 74 responses, 60 of which were from Norwegian nationals, while the remaining 14 were international. Over half of the international group was comprised on people from other European countries, with North Americans making up much of the other half. When looking at the age distribution, approximate a third of respondents fit into the 18-29 age bucket, with another third fitting in 50-59 age group. When looking at the occupational classification, there was a large mix of occupations, which helps to provide a more accurate reflection of proper social demographics.

### 5.1.2 Association of Animals to the National Park

When looking at how strongly respondents associate different animals—Muskox, Reindeer, Wolverine, and Arctic Fox, found within Dovrefjell-Sunndalsfjell Nasjonal Park to the national park, respondents were asked to rank their level of association of the animal from 1 -10. The results of this question are depicted in Figure 6. With both International and Norwegian respondents, the muskox received the highest association with the national park—9.2 and 7.7. After the muskox, both the reindeer and the arctic fox received similar levels of association of 7.1 and 5.64 for reindeer association and 7.33 and 4.55 for the arctic fox, with the wolverine being the animal that is least associated with the national park 5.28 and 3.73. These results are depicted in Separating responses into groups of “Norwegian” and “International” illustrated that both groups rank animal association to the national park in the same order, however Norwegian respondents tended to assign greater values of association to animals overall, compared to international respondents. The lower level of association between the reindeer and the national park is also of interest, especially given the biological

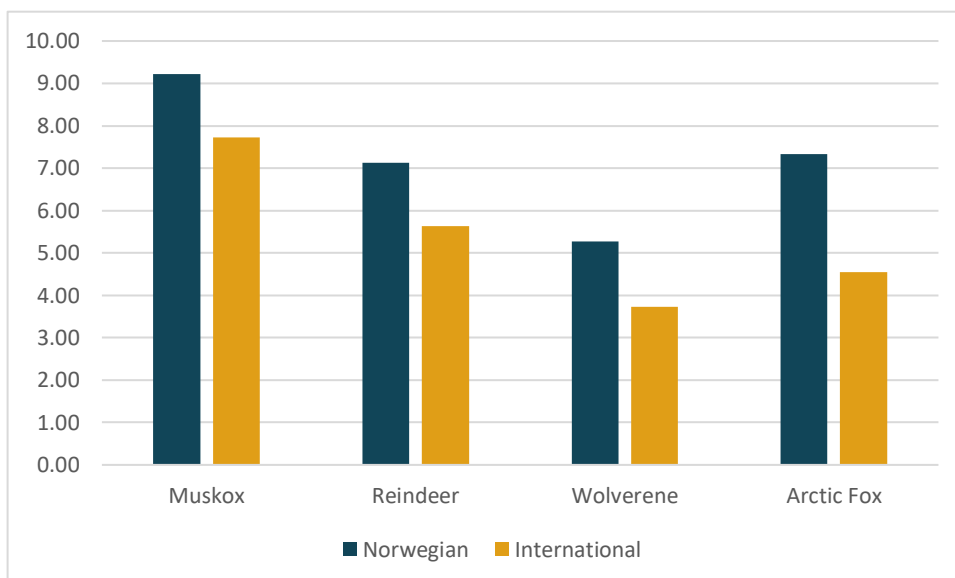


Figure 6: Results from the question "Animal Association with Dovrefjell-Sunndalsfjella National Park?"

significance of the herd, however this could also be attributed to the fact that the reindeer are common throughout other regions of Norway, and the genetically wild nature of the herd might not be a strong enough pull for people to make the association. In line with the reindeer in terms of association was the Arctic Fox. While the fox ranked at a similar level as the reindeer for Norwegian respondents, it also had the greatest variance between Norwegian/International respondents. This can partially be attributed to multiple popular NRK documentary videos which showcase the Arctic Fox within Dovrefjell which was predominantly distributed in Norway.

This high level of association of the muskox to Dovrefjell-Sunndalsfjell Nasjonal Park is an early indicator of the development of a social representation—a symbol of the national park. This sentiment can be further shown through the examination of the Park’s website, where the first images presented to visitors are of muskoxen, as shown on Figure 7.

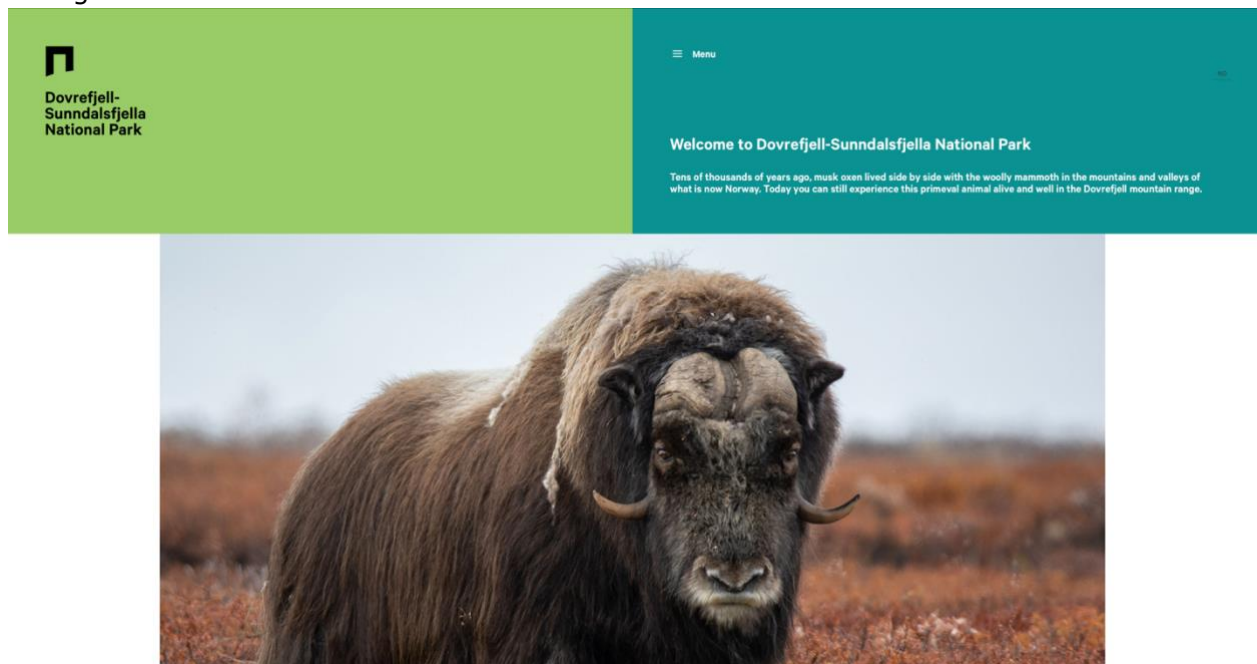


Figure 7: Screenshot of the front page of the Dovrefjell-Sunndalsfjella National Park Website. Taken on 03.23.2022 (Dovrefjell Nasjonalparkstyre, 2022a)

Beyond the photos on the website, the remainder of the webpage primarily focuses on providing links to muskox related information, such as the “The Muskox Trail”, “Muskox Safaris”, “Muskox Code of Conduct” and the history of the Muskoxen within the national park. The rest of the website is also heavily dedicated to providing information about the muskox, with little-to-no information made available about other animals or aspects about the national park. This sole focus in the information provided by the national park on the muskoxen in Dovrefjell-Sunndalsfjella National Park shows how closely linked the identities of both the Muskox and the National Park are.

When looking at how the muskox is associated with the National Park, an additional question was asked which looked to explore individuals’ belief on if the muskox should exist within the National Park. The results of this question resulted in an overwhelming level of support for the existence of the muskoxen within the national park. The results of this question again show there is significant support for the long-term presence of the muskox within the national park.



### 5.1.3 What does the muskox symbolize to you

The results from the questionnaire question asking about participants' individual symbolization of the muskox. The results from this question are displayed in Figure 8. When looking at the responses between both international and Norwegian park visitors, there some differences can be observed. Responses from Norwegian respondents, there was also a strong focus on association of the muskox with ancient and historical times. Around a quarter of all respondents and a third of Norwegian respondents, described the Muskox with words such as "Urdyr" and "Urkraft", which translate to ancient or primordial animal and power. Other words looked to describe the muskox as being indigenous or as a flashback to ancient times. This frequent and shared depiction of the muskox as an ancient, prehistoric animal goes into the creation of another social representation.

While Norwegian comments on the symbolism of the muskox as an animal of the past and as being a symbol of Norwegian heritage and nature, international respondents focused more on the physical characteristics of muskox such as "Strong", "Unique", "Mysterious", "Resilient" and "Perseverance" when describing what the muskox symbolises to them. This focus on the more physical aspects as opposed to social/historical characteristics described by Norwegian respondents. This goes to highlight the differences in the social groups in determining representations.

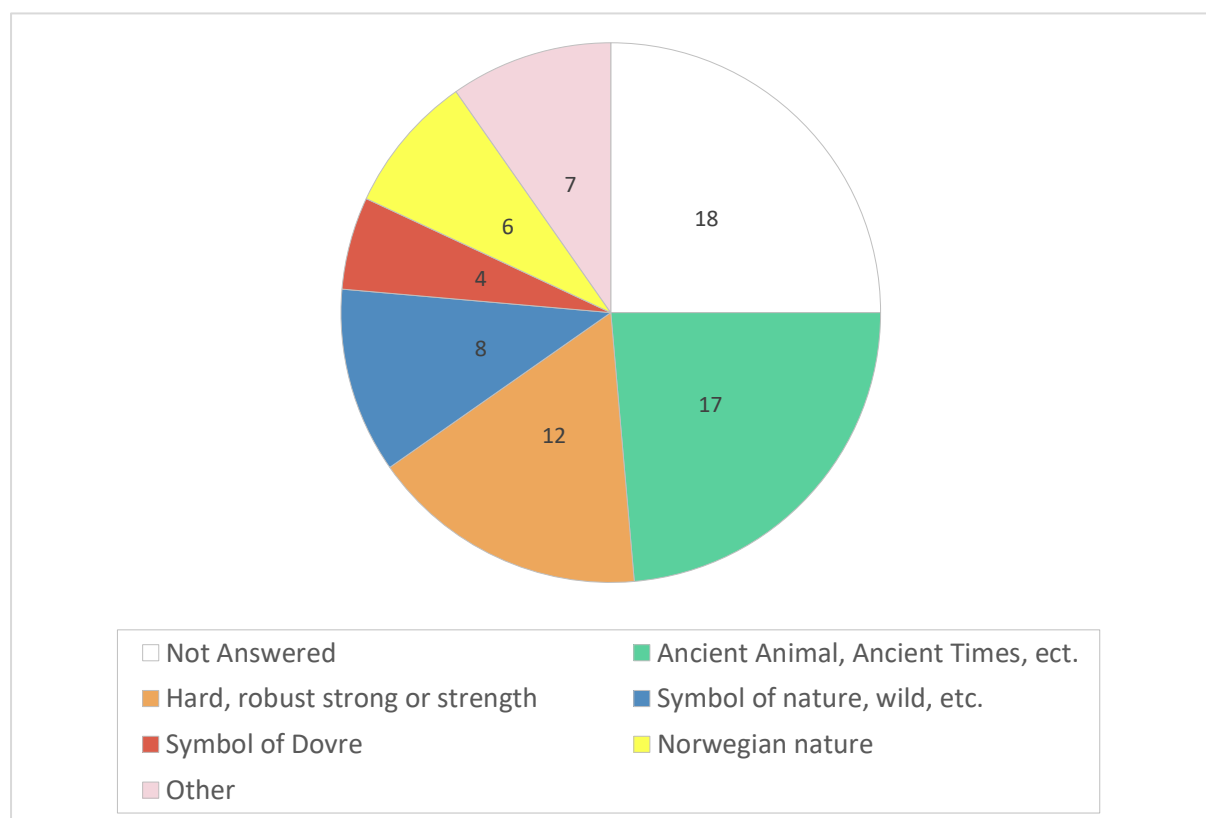


Figure 8: Questionnaire results for the question "What does the muskox symbolize to you?". Results have been translated into English. Numbers shown are reflective of number of responses.

### 5.1.4 Motivations to go on a Guided Muskox Safari

Of the 87 questionnaire respondents, 27 of the respondents had gone on an official guided muskox safari, which roughly in line the population numbers of people who visit the park on their own as opposed to as on an organized tour (3,000-3,500 on a safari, compared to 10,000-11,000 total visitors) (Rangbru & Seljevoll, 2017). The participants

who had gone on the safari had a mix background, however many of them would be classified into older age groupings 50-60 and 60-70 and many of the respondents were of Norwegian nationality.

When looking at the responses, four distinct categories emerge as primary motivations behind taking the safari: Unique Experience, Education, Animal Welfare, and Photography. Both the "Unique Experience" and "Photography" motivations were the most dominate motivations on going on the safari. Within the "Unique Experience" category, many respondents answered that they wanted to experience the muskox in its natural habitat, as well as they enjoyed the ability to be a part of nature when looking at the animals. In addition to these experiences, several respondents also highlight that the guided trip was a good way for them to easily see the muskox and be able to bring their children along as well. This concept of the using the guided safaris as an easier means to see the muskox is also seen throughout the other categorises of motivations, most notably for photographic reasons. Several respondents had the primary motivation of going on the safari was to get easier photographic opportunities, as they perceived a higher probability of seeing muskoxen with a guide, as well as the guides being able to create an environment where they can get closer to the animals for better photos. Muskox safaris were also said to be used as a component of photography workshops,

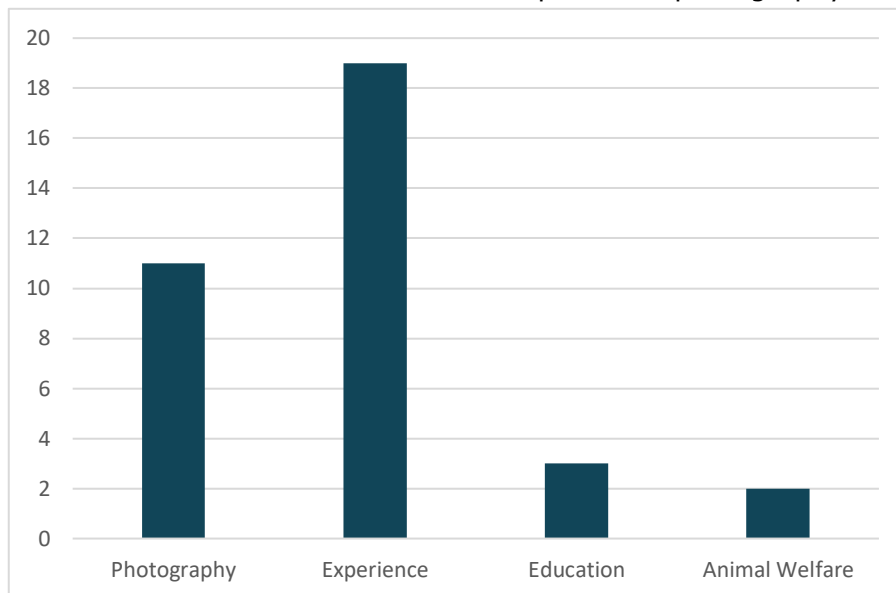


Figure 9: Categorized motivations of Muskox Safari participants

which would bring larger groups of people into the park with the explicit goal of taking photos of the muskox. While this form of wildlife viewing is largely viewed as being non-disruptive, there is also a fear that if the number of photographers coming the park increases, with ambitions of getting a "trophy photograph", this could lead to more stress being put onto the animals. The use of a muskox safari for educational purposes was also an interesting take away, as people would look to guides as experts in the environment and are able to provide more information about the local environment and species.

### 5.1.5. Perceptions after the Muskox Safari

Questionnaire respondents who had gone on a safari were also asked how or if their perceptions towards the muskox in Dovrefjell, which resulted in the emergence of some key themes. In some of the cases, there was no change in individual perceptions, however others identified the importance of continued maintenance and management of

the muskox within Dovrefjell. With the respondents who had said that they had not experienced any change in perception, many of them had already previously visited the park on their own. Of those who's perceptions towards the muskox had changed, there was common theme of the needing to increase the efforts to maintain the welfare of the muskox, especially with the issues regarding the low genetic biodiversity of muskox. Some of the international respondents who had been on a safari made comments about the muskox being a "fun tourist attraction" which has a neutral impact on the local environment. There was also an underlying theme of people having more negative views on the current management policies, with respondents expressing desires for the population and geographic limits to be lifted and the muskox should be allowed to further expand across the entire national park and beyond. There was one response which highlighted the apparent contradiction between the status of the muskox on the invasive species list, while still being very respected and vital component of the national park symbolism. Overall, many of the responses show how the muskox safari have worked to educate tourists about the muskox and provide a greater overall awareness of the issues currently facing both the muskox ecosystem, in addition to the overall Dovrefjell-Sunndalsfjella National Park.

#### 5.1.6. Summing up

Overall, the use of the questionnaires was able to help determine generalized feelings of visitors towards the muskox population within the Dovrefjell-Sunndalsfjella National Park. From this, some key takeaway points are as follows:

- When considering the national park, both Norwegian and International visitors most strongly relate the muskox with the National Park, with the reindeer, wolverine and arctic fox all having significantly lower levels of association. Typically, international visitors have an overall lower association of all animals with the park than is seen with Norwegian visitors.
- Many of both Norwegian and International visitors feel that muskoxen should belong within the National Park, however a higher percentage of international visitors feel the muskox does not belong.
- The motivations for electing to go on a Muskox Safari is largely due to visitors' motivations to get an enhanced experience as well as the ability for the trip to provide better photographic opportunities.
- Muskox Safari participants also view the tours as a more ethical and safe method for viewing the animals.

## 5.2. Thematic Analysis—Canadian Perspectives

Throughout the analysis of management texts published by both the Canadian federal government and the territorial governments of the Yukon (YK), Northwest Territories (NWT) and Nunavut (NU), there was an overarching theme on the representation of the muskox and perception of the animal as a natural resource. This was clearly seen with the management objective for the Yukon's North Slope muskox herd was to ensure long-term optimum productivity and to ensure efficient utilization of the available harvest (The Wildlife Management Advisory Council (North Slope), 2017). When looking at the key representation themes which were identified for the muskox in Dovrefjell, the representations of Tourism, Political animal, and cultural connections were all common between the two countries.

### 5.2.1. Political

A smaller representations of the muskox in Canada is as a political animal. This can be seen in two ways, the first being a tool to achieve arctic sovereignty, and the second being indigenous land use access rights. The concept of arctic sovereignty has been an increasingly popular topic in global politics, as northern countries look to stake their claim of sovereignty over the resources and land that is being revealed by rapidly decreasing ice cover. The Canadian Federal Government's decision to manage the muskox is believed to be partially related Canada's motivation to secure their arctic sovereignty. The decision in 1917 to ban hunting of muskox, imposed on the grounds of protecting the population from extinction due to over hunting, is an example of the government's efforts to manage the population. The below passage from Winbourne and Benson (2021, p. 2) highlights how increasing the management efforts of muskox and overall activity in the Arctic would help Canada solidify its claim in the arctic region.

...the 1917 decision was taken at least in part due to establishing sovereignty through sending enforcement patrols, and indeed, muskoxen continued to play an important and interesting role in Canada's federal sovereignty conversation across the Arctic for many years

In addition to using the muskox as a political tool to help claim arctic sovereignty rights, the management of the muskox also serves another political motivation, the fulfillment of indigenous communities' right to harvest the animals (The Wildlife Management Advisory Council (North Slope), 2017). This right, Inuvialuit, grants Inuit preferential hunting access for subsistence purposes over non-native groups, so long as conservation objectives are met.

### 5.2.2. Tourism

Another minor representation is the concept of the muskox being a driver of tourism in the region. While this representation was not heavily featured in the management policy documents, it was mentioned by the government as a motivation for future management of the muskox. The management document for the North Slope muskox population, highlights the intrinsic value of the muskox from a biodiversity perspective and how non-consumptive interests held by residents and visitors are recognized by the management bodies (The Wildlife Management Advisory Council (North Slope), 2017). From the managers perspective that visitors have high levels of interest in muskox viewing opportunities, and this interest is likely to remain for a long time. Increasing tourism is also seen as being a positive influence for the future management of the muskox (Winbourne & Benson, 2021). While the concept of tourism is beneficial for the management of the muskox, it can also be seen as being in confliction with the cultural

practices of some of the local communities. Focusing muskox conservation efforts for the “non-Indigenous values such as tourism and guided hunts” has also been attributed to causing a decrease in the traditional value placed on muskox by local communities (Winbourne & Benson, 2021, p. 8)

### 5.2.3. Cultural

The largest social representation of the muskox within the Canadian arctic, is the animal’s relation to the local cultures. On the very surface level, the muskox represents a major source of food security for the Inuit and other indigenous groups. This importance as a food source is known to be passed down through the oral histories of the Inuit communities, and the importance of the animal far exceeded just being a source protein (Winbourne & Benson, 2021). The muskox also contributes to sustaining traditional subsistence economies, by providing food, tool, clothing, and shelter.

Beyond their utilitarian purposes, the muskox has also been able to construct itself into the cultural and mythological fabric of the communities. Within the stories of Inuit communities, muskoxen are viewed as being wise, and having the ability to understand human language (Winbourne & Benson, 2021).

The importance of the animal to the local cultural is also dependent on the location of the social group to the muskox, as described by Winbourne and Benson (2021). Communities which live further north and where the muskox are in greater numbers, have been seen to possess stronger levels of attachment and cultural connection, than what is seen in with southern communities.

#### 5.2.3.1 Traditional Knowledge

This stronger connection with the muskox has encouraged the creation of greater knowledge about the animals. Winbourne and Benson (2021) refer to this knowledge as being “Traditional Knowledge” and “Community Knowledge”, which refers to knowledge and cultural connections to muskox which has been passed down through generations through both oral and cultural traditions. This traditional knowledge has been utilized by the territorial governments in the creation of management policy (The Wildlife Management Advisory Council (North Slope), 2017; Winbourne & Benson, 2021).

Inuit Qaujimagatuqangit (IQ) is the knowledge and insight gained by Inuit through generations of living in close contact with nature. For Inuit, IQ is an inseparable part of their culture and includes rules and views that affect modern resource use (Kivalliq Wildlife Board, 2009, p. 5)

In communities where the muskox population has been extirpated or scarce for longer periods of time, this transfer of knowledge has broken down, and with it the cultural connections. Muskox population declines, which have resulted in restrictions on hunting has also impacted the way individuals in communities perceive the animal. A respondent in the study conducted by Winbourne and Benson (2021, p. 3) highlighted how the population decline has had a huge impact on the cultural practices for his community, and it “continues to be a challenge to remind hunters that muskoxen are indeed a traditionally harvested animal”. Stemming from the 1917 ban on hunting, has also seen the break down in the cultural connections towards the muskox, with groups no longer wanting to hunt the muskox as they lack the knowledge on how to do so carefully.

The 1917 ban on muskox hunting also had a significant impact on Sahtú Dene and Métis’ traditional knowledge and harvesting. The extirpation and ban effectively separated people from muskoxen, and because of that there is little traditional knowledge about muskox in this area today, and it’s been a challenge to get people to harvest again

## 5.3. Interview results

### 5.3.1 Interview Participant Categorization

From the interview process, a total of 12 participants were selected from the three selected social groups (Park Visitors, Park Managers, and Tour Operators). The park visitor social group was comprised of 8 respondents, with only one of the respondents being a resident within the communities surrounding the Dovrefjell-Sunnalsfjella National Park. The two park managers interviewed were belonged to the two main government bodies which manage the national park and muskox population—the Trøndelag County Governor’s office and the National Park Board for the Dovrefjell Sunndalsfjella National Park. The tour operators were employed by locally run tour operations based in the Oppdal and Dovre region.

Table 2: Categorization of Interview Participants.

<b>Participant</b>	<b>Role</b>
<b>Park Visitor 1</b>	Park Visitor
<b>Park Visitor 2</b>	Park Visitor
<b>Park Visitor 3</b>	Park Visitor
<b>Park Visitor 4</b>	Park Visitor
<b>Park Visitor 5</b>	Park Visitor
<b>Park Visitor 6</b>	Park Visitor
<b>Park Visitor 7</b>	Park Visitor
<b>Park Visitor 8</b>	Park Visitor
<b>Park Manager 1</b>	Manager
<b>Park Manager 2</b>	Manager
<b>Tour Operator 1</b>	Tour Operator
<b>Tour Operator 2</b>	Tour Operator

### 5.3.1 Symbolic Relationship to Muskox

#### 5.3.1.1 The muskox belongs as a symbol of Dovre

Looking beyond how the muskox is associated with the national park, questionnaire participants were asked to describe what the muskox symbolizes to them. Typically, responses to this question were short and concise, and used descriptive buzzwords as opposed to longer sentences. Despite their length, the responses to this question helped to further illustrate other social representations with patterns and trends emerging from the responses. Many responses, from both Norwegian and International respondents, described the muskox as being synonymous with Norwegian nature, as well as being

strong and able to survive in harsh conditions. Responses also looked to draw direct connections to the national park itself, with comments saying that the Muskox is the symbol for park as well as the surrounding communities. This belief was exemplified in the interview with Park Visitor 1, a resident within the Trøndelag County who had grown up in the southern part of Norway.

I think that if, if the government decided not to have muskox anymore, they [Norwegians] will be quite upset. All the Norwegians, I guess, at least from the south of the country because we feel that this is a part of Dovre, the muskox. And you can see we have it in the community shield from the Dovre Kommune as well. There is a Muskox on the flag. We identify very much with the muskox.

This view of the muskox as being a symbol of the national park was also mentioned during an interview with a member of the National Park Board (Park Manager 1), however it was their feeling the muskox being the symbol of the national park was more held by people living in areas outside of the national park, as opposed to views of residents of surrounding communities who are more likely to view the reindeer as the symbol of the national park.

I think most people outside the area will look upon the muskox is that icon species and it was also until we got the new brand for the National Park The muskox was used the symbol for the National Park not the reindeer...but when you come to the people around Dovrefjell, the reindeer is way more is the symbol okay for people not directly in the area I think muskox is the symbol

This view held by Park Manager 1, was not supported from the questionnaire responses and interview conducted with the local park visitor participant. The respondents in both questionnaire and interviews were a mix of locals as well as people from communities outside of the surrounding communities. In many of the cases, the responses placed the muskox higher than the reindeer, regardless of where they are from or grew up.

The importance and relationship of the muskox to the national park, was also further revealed throughout the remainder of the interview with Park Manager 1.

Park Manager 1:

When Dovrefjell National Park was expanded for some years ago. The King, I think it was to King or maybe it also the Prince, had done a speech. When he opened the new area, the expanded Park. Then he mentioned the muskox, also the reindeer, but he mentioned the muskox. And that's a sign.

This again is showing a strong association of the muskox with Dovrefjell-Sunndalsfjella National Park, and that these feelings are not just held at by public but also by higher members of the state. Also, as it was alluded to from the participant, the decision to mention the introduced species, acts as a sign for park managers for the continued inclusion and long terms management of the muskox within the national park.

During an interview with a member of the county governor's office (Park Manager 2), the question of ranking the muskox and reindeer, in terms of importance to the governor's office, the reindeer was stated as being the more important species.

The county governor would rank the wild reindeer on top if that's the question, yeah. I hope this society do too. But I'm not sure because the muskox is a fascination fascinated species. And very, very special. And they can see it (the muskox). The reindeer is so shy and vulnerable, that they are not easy to see. And the people don't see it. So, but because of our responsibility for the reindeer, we rank the wild reindeer on top.

From this passage, there is some evidence of a divergence in the way the manager and park visitor social groups associate the two animals with the national park. As was

alluded to by the participant, this divergence could be potentially attributed to the overall accessibility of the two species. The muskox population within the national park live in a very short proximity to a major highway and rail line providing the public an easy viewing option. To find or observe the reindeer within the park, would require either high levels of luck, or come from the result of high levels of effort.

Park Manager 2 also went on to express how it sad that the muskox gets to take the role of being the symbolic animal for the national park "it's quite sad especially when the muskox is not the purpose for the protection". Part of the rationale behind why the muskox has emerged as being the more iconic species is due to its uniqueness as well the muskox commercial nature.

People tend to recognize the special things, some people because muskox at Dovrefjell is special. It is what people are perceiving and of course you it's used in marketing; it's used as brand for clothes and all the products if you google Dovrefjell you will find clothes brand name Dovrefjell, and they have a muskox as an icon.

The symbolization and association of the muskox with the national park has also contributed the decision to take a photo of the muskox as the cover photo for the Dovrefjell-Sunndalsfjella National Park management plan. This decision to make the muskox the cover photo was also viewed as being contentious, with members of the national park board, advocating for the reindeer to be placed on the cover, as the management plans for the national park are designed for the benefit of the reindeer, and not specifically the muskox.

Park Manager 1:

So, it's not I think it's the nature of what is perceived to be to be the symbol for over here. And even when we make the management plan some years ago, you'll see (\*shows Park Management book with Muskox on the cover) ... I was quarreling a bit with those that there should be reindeer on it.

### **5.3.1.2. The muskox as a Primordial "Urdyr" Animal**

Building off the questionnaire question "What does the muskox symbolize to you", interview participants were also asked to follow up again with how they would symbolize the muskox. By using this question as a follow-up question, participants were able to explain and elaborate more on their answer than would be possible using just the questionnaire responses. The use of interviews helped to further describe and illustrate the social representations. Interviews conducted both with questionnaire respondents, as well as with government officials and local business operators. The use of interviews to help determine how the muskoxen are symbolised works to compliment and expand upon the answers received from the questionnaire. The follow up interviews with questionnaire respondents allowed for the ability to further elaborate on how they symbolize and represent the muskox.

Park Visitor 3:

I feel it's from lots of years ago. When we were Vikings.

Park Visitor 4:

To me, it's the genuine. I can see back to the glacier late to coming when the animals walk you to Norway on coming south going to the 10,000 years ago. To me it's the most unique animal in the Norwegian mountains and in in Sweden when we have these animals walking forth and back to this openness on you know in Sweden.



### 5.3.1.3 Muskox as an Introduced and a Political Species

From the responses by the public, in both the interviews as well as the questionnaires, many people perceive the muskox as a natural part of the ecosystem at Dovrefjell, and not really recognizing the species had only been in the national park for 100-90 of the last 10,000 years. While many respondents did not focus on the muskox being introduced, some respondents made a direct point of mentioning it. When conducting the interview with Park Visitor 5, when asked about the cultural connection, the participant's answer included a recognition that the muskox is not naturally located within the national park. Earlier in the interview, the participant had also identified that because of the animals being non-native to the region, and being managed by the environmental agencies, it had also increased their level of interest in the animal.

Park Visitor 5:

Yes. I? Yes, I do. I know that they are not. It's not a natural herd we have. They were here many years ago, naturally. And then they were wiped out or extinct. And then they will be re-introduced here with many failed attempts. If I have that correct. Or so I do feel that it's something very old originally, that have brought back been brought back. And yes, I do think they're specially in that way. Yeah. And they look magnificent. Just the way they look and how they live, you know, up there in the winter. It's just majestic.

As the muskox in Dovrefjell is a non-native, alien species, there is the question as to why the managing governmental bodies have continued to allow the species to continue existing within the ecosystem. Within an interview with a participant with one of the managing bodies, the participant stated the muskox are a species that is tolerable for the parks management to have, as the economic benefits created from the presence of the muskox helps to offset any of the environmental disruptions caused from their presence. This tolerability can also be shown in the muskox categorized as an "low risk alien species".

Park Manager 2

But it is not very many species that we that are alien that we want to have. But muskox is one of them. And, and tourism is very great driver in that setting.

Park Manager 1

Many are fascinated. Very many is familiar and now, the muskox on Dovre they like it. They are a little bit maybe proud of it. And they could take care of it despite it is a foreign species.

Building off the representations of the muskox being an introduced species is the concept that the muskox is a political species, and their presence within the park is a result of political motivations. When interviewing participants from the management officials, the question of why the muskox is allowed to remain within the national park, the respondent referred to the muskox as being a "political species". The decision to have and maintain the population of muskox in Dovrefjell came from the highest level of national environmental management, the Miljødirektoratet (Norwegian Environment Agency).

Park Manager 1

And if you can say this muskox is a political species. The Ministry of Climate and Environment and the Norwegian Environment Agency, what we call the Miljødirektoratet, they have decided, not the County Governor...The County Governor have been given an order or assignment to make and manage management plan with presence of muskox. They have told us "We shall have a little population with Muskox in a little area".

From further discussions with the participant, they went on to further explain how the surrounding communities had developed a strong symbolic attachment towards the muskox, as seen with the muskox being incorporated into the Dovre Kommune coat of arms. Part of the benefit brought on from the muskox is also due to the significant financial benefits brought by the touristic demand to come and see the animals. These financial benefits greatly help the local economies, beyond the income earned by the muskox safari. Tourists from around Norway, and the rest of Europe will often travel to the Dovre Kommune to come see the muskox will also stay in the hotels and cabins, eat at the local restaurants, and shop in the local stores. These motivations are part of the reason as to why the political leaders in the municipality have lobbied hard for the muskox to remain within the Dovrefjell-Sunndalsfjella National Park.

Park Manager 1

The Ordfører (Mayor) in the municipality, the man or lady who is political leader in the municipality, okay. They want to have the muskox. Okay, they, earn money they, they will just say...Dovre Mountain is known everywhere in Norway...because of the muskox. People are coming from Sweden from Germany from France, to see the muskox in Dovre municipality. So, it's a political aim to have a little population of muskox. Because the municipalities' want it and they have brought that aim to the minister where the political are sitting. I think is that I think it is.

During an interview with a muskox guide, the guide highlighted how the Muskox Safaris also work to help contribute towards to promoting local business, as often on guides will handout cinnamon buns from the local bakery and recommend local stores where tourists are able to purchase muskox related goods. Safari participants were also told by the guides about the possibility of being able to purchase muskox sausage and other meat products in the grocery stores in the surrounding communities. The meat used in making these products was sourced from the muskox which had been removed from the park by management officials. All these services for tourists help to bolster small town economies, providing both direct and indirect jobs and income to many people, which further incentives governmental members to continue advocating for the muskox to remain.

### 5.3.2 Muskox as a Driver of Tourism

As was alluded to in the previous sections, the muskox population in the Dovrefjell-Sunndalsfjella National Park is a major tourist driver for the region, with people coming from Sweden, Germany, the Netherlands, and France all with the purpose of being able to see the muskox. This international attention has the potential for the development of a sense of pride held within by the local people. During the interview process, many of the public interviewed confirmed that the international attention that the muskox receive, has developed an enhanced sense of pride in the local landscapes and the decision by the government to continue managing the muskox. There was also an installation of a sense of nationalistic pride also stemming from the presence of muskox within the country.

Park Visitor 1:

Yeah, it really does. That is what is special about the muskox and the National Park at Dovre, I'm quite proud of Norway and quite proud of being a Norwegian

Interviewer:

Does that sort of build a sense of pride within you of having these animals in this nature that people are interested in from outside of Norway?

Park Visitor 5:

Yes, you bet. It does because they are special, and they are they're just the look of them and knowing that they can live in those harsh condition.

In many cases respondents believed motivation for international tourism was driven from an overall fascination in the animal, as well as being easily accessible and photogenetic animal. The concept of muskoxen being an animal which is both unique and ancient, as well as being easily accessible was identified by many participants and respondents as a driving reason for their decision to visit the park. Other muskox populations in Canada, Greenland and in Alaska are found in remote and hard to reach locations which makes photographic objectives both logistically difficult and costly. The appeal of being able to make a quick stop on the journey from Oslo to Trondheim, either by train or by car, and see muskoxen in nature works as an attractant to bring people into the region and encourage them to stay in the area for a longer time.

A component of the touristic draw is the concept of muskox safaris—private businesses operations which provide guiding services for people to help increase the probability of seeing muskox when visiting the park. Beyond just providing tourists an easier way of finding the muskoxen, the tours also work to provide tourists with cultural and historical insights into the local ecosystem, something that they would miss if they were to go on their own. The safaris also provide a greater level of security and safety for people visiting the park, as well as working to inform people of the proper etiquette needed for wildlife viewing. From the interview process many of the participants agreed that the use of the guides is an effective and safe way of going to see the muskox.

Park Visitor 1:

But if you want to take pictures or want to come a little bit closer, because the guides if they have a smaller group, they will bring you a little bit closer to these animals then you should have a guide then. And in addition to that, I felt that on this workshop, we learned a lot about the animals.

### **5.3.2.1 Threats of Tourism**

While participants were happy and proud to see that there was demand on an international level to see the muskox, there was also a recognition of the potentially threats increasing tourism numbers could have on not only the muskox, but also the reindeer and surrounding ecosystems. These perceived threats towards the health of the ecosystem have the potential of becoming more probable as the government looks to increase the amount tourism numbers in the area.

Park Visitor 1:

But of course, if we get too many people, like we saw this summer, I'm not sure if that's good for the for the nature up there. Maybe because this summer I was quite scared when I came up there and so all these camping cars there was tents all over, it's like having a camping area. So, but I'm happy to see that everyone liked it. I mean, I'm very happy when people talk good about Norway and know Dovre and say "wow that was fantastic to see these animals. I saw the eagle as well. Fantastic. Come back to Norway". Of course, I'm proud. And I think that's very good. But if we have 1 million people every day of at Dovre, all the animals and all the nature will be destroyed, I guess. Because it's not that big area. Dovre is a kind of small National Park. So yeah... I've seen a lot of people, but I can't remember to have seen a chocolate paper or, or plastic bag or some rubbish or waste. So, it seems for me that people who wants to go to Dovre, they respect the nature that bring back they try not to destroy anything, and they bring back all the rubbish they have. So that's make me happy. And that's make me think that it's room for quite many people if they can respect the nature and behave like they should, which again, most of the people do.

Park Visitor 2:

Yeah, kind of, and it also worries me a bit because it's a lot of traffic. it's a lot of people, yeah,

While increasing tourism has emerged as a rising concern which was mentioned by all interview participants, efforts are being taken by the Muskox Safari tour operators. Guiding operations often developing scripts which look to teach safari participants about the muskoxen, the national park, in addition to broader concepts such as proper environmental stewardship and how they should act when in nature.

Tour Operator 1:

"...we have in our script; we have a lot about like the Area and other animals and why you should like to protect it. So, we have a lot of focus on this. Like, of taking care of nature and teaching people about why it's important to, for example don't leave garbage in the nature or like when you walk don't make new paths. Just like basic, or for example, I like how wonderful the different plants are. Like if you take one plant out how long it will take to grow."

Some respondents identified that the use of the on an official guiding service would be beneficial for both the participant as well as the animals as the guides can work on creating a safe environment and ensuring visitors do not end up in a position which could cause stress to the muskox and risk creating conflict. This sentiment of using a guide was also echoed during an interview with the National Parks Board, who recognize how the use of guides is beneficial for minimizing conflicts and stress on the muskoxen and people, as well as helping to reduce disturbances for the reindeer.

"We have guided tours, but many, many, many more people are coming to see them and those going without guides is a problem for us... approximately between let's say between 12 and 15 thousand people are coping with seeing muskoxen as their primary vehicle for the visit and only about 1/3 of them are using guides tourists are going by themselves. We would very much like if it was the other way around because the guides are mainly behaving very good knowledge of the muskox and other flora and fauna in the area... I had been dictator of course I would say you have to use the guide"

Guiding operations also limit the times of year when they are conducting safaris to primarily to late spring, summer, and early fall, with many tours stopping towards the end of September and Early October. From the discussions with tour operators, this decision is due partial to lower tourist demand in the winter months, but also to help minimize the stress put onto muskox during the cold, harsh winter times.

Tour Operator 1:

Because what we get so interest isn't really profitable. And, because the in the winter, there they are, well, it's very tough for them tougher muskox they can lose after like in the most like 40% of their weight. And so, there's not too much food for them. And if you have like big groups working close to them, it's they can be quite stressed out.

The impact on the reindeer from increased human presence within the national park was identified during an interview with the National Park Board. Within this interview, the participant stated that while the muskox does not push any real ecological challenges towards the reindeer and the two species are able to live in coexistence, the increasing number of people coming to the park to see the muskox does create a large disturbance on the reindeer.

Park Manager 1:

Oh boy I am afraid it's the other way around because so many people come to see the muskoxen in the area that used by the reindeer that that puts more pressure on the reindeer in fact okay the muskox itself is of course not trouble for the reindeer, did they

accept coexistence in the natural habitats too fall on our conference between the people affected by the muskox that is the challenge here.

The influence of social media can also present additional impacts, as more photos are shared on platforms such as Instagram and Facebook can generate even higher levels of interest from the global community and further drive tourist numbers as more people look to come to the park to get their own photographs of the muskox. The issues of over increasing visitation to come and see the muskox, has started emerging as a more major challenge for the environmental management authorities. During an interview with a participant from the Dovrefjell-Sunndalsfjella National Park Board, this issue was clearly identified as a point of concern. The Norwegian cultural representation towards nature also creates additional issues from a management perspective, as efforts to mitigate the impacts from tourism can be counteracted because of the "*allemannsrett*" (Right to Roam).

Park Manager 1:

Our challenge is... Well in other smaller areas of the park, like Hjerkin, is also westwards from Kongsvoll will go back in that is very heavily visited, so our main challenges in this area is visitor management and to try to steer people in a way that do not damage the value so the park too much, and of course, especially, literally wear and tear on tearing this rather small some spots that they may they are easy to remember. The main challenges are the interaction between people and reindeer that the traffic of people is cutting off the migration routes of the reindeers... I'm trying to say you have no negative means to steer people in Norway you have just positive means, and so what you're doing is to make try to make change some information to steer people away from the most vulnerable places but there the muskox is a challenge because that is luring people into areas that don't want too many people

As illustrated in the above passage, the lack of ability to develop means of preventing people from accessing ecologically sensitive areas presents a challenge in ensuring the long-term ecological health of the ecosystem. Positive means—such as providing visitor information, can be effective with locals or people who are used to spending time within nature, influxes of tourists who have not spent time in wilderness areas, or do have a connection and respect for the landscape, might be less likely and willing to understand the preventive measures that have been suggested. It could be assumed that these tourists would be international, however from conversations with different guides, it was shown that typically international tourists would be more likely to either go on an official muskox safari, or would listen to the rules, while the Norwegian tourists are more likely to push the recommended boundaries.

An additional potential impact of increasing tourism is changes to the behaviours of the muskox. During an interview with a photographer who frequently visits the park stated they had observed a difference in the behaviour of the muskox located closer to the highway and Kongsvoll station and those located further into the national park. According to the participant, the muskox which reside closer to the Kongsvoll Station are noticeable more docile towards human presence, while muskox herds further into the national park are more shy and more likely to run away.

### 5.3.3 Tolerances/Fears of Muskox

As briefly discussed in 4.1.1.1, when looking at the muskox as an introduced species, the overall acceptance and continued maintenance of the muskox within the national park is reflective of an overall societal tolerance and acceptance towards the muskox. In many aspects, Norwegians do not have any major issues or conflicts with the muskox in Dovrefjell, especially when they remain within the core management area. From the

responses from both questionnaires and interviews, a clear picture is illustrated showing an overall high level of acceptance and tolerance towards the muskox existing within the national park, of a high percentage of respondents agreeing that the muskox belongs within the National Park.

From a park management perspective, when looking at whether the muskox belongs within the national park, the answer is mixed. According to Park Manager 1, due to the relatively calm nature of the muskox, the animal can be a good first experience for some to nature and how act around wildlife. Also, as the animal does not damage the ecosystem, there is no major negative impact for the muskox existing within the par

Park Manager 1:

Mixed feelings really, because they don't do in themselves, they don't do any harm. And if you can manage the people coming to see them, it's, it's a very good people to show to people, animals, people, because you can show them without like stressing them too much...if you behave correctly. So, it's, it's helpful, it's a very good player. It's a very good experience for people to come and see it and especially for people not to use to nature and while giving people a very good experience.

However, despite these high levels of support for the muskox to exist within the national parks, conflicts have occurred when muskox have emigrated or left the core management area and have entered the surrounding communities. As a result of the impact emigrations can have on the surrounding communities, a population cap on the muskoxen was imposed to prevent the need for muskox to want to wander from the core area. Despite this population cap, there are still incidents where muskox will venture outside of the national park. During these incidents often the management officials will follow the muskox in hope of it returning to the national park, nevertheless, there have been incidents in which muskox have needed to be killed once they start becoming problematic for residents. When these muskoxen leave the national park and become problematic, this is exemplifying an exceedance of the social tolerance threshold. As a result of the exceedance of the threshold being exceeded, the national park management plan for the muskox had to be updated, introducing a population cap on the number of muskoxen allowed to exist within the national park.

Park Manager 1:

In the old management plans, we didn't have any limited numbers of individuals. And quite many individuals emigrated from the population. They came often to places where they created problems and we wanted to reduce the problems and thereby reduce emigration... the local municipalities who have them muskox in they are their area did not want to have more than 200 individuals because they created some problems. Okay. That's the most central thought about why 200? And you, see? Not so much biology.

Within the news media, the population management numbers of the muskox have been a widely covered issue, with several papers and news outlets within Norway covering stories of the annual muskox hunts to bring the population down to the 200-unit threshold. The overall narrative within these articles is more aimed at being educational, and clearly state the objective of reducing the number of muskoxen is to prevent conflicts. Despite this goal, there are still social groups who oppose the limit and population cap on the muskox.

The real fans of the muskox. Many of them is angry, everything and muskox is shot outside the area, for instance, they want them to be then brought back

From the management of the national park standpoint, there is a strong view that the people who want to the muskox population to be expanded and their territory to be

increased, are short-sighted and are not able to understand the benefits of limiting the range and population of muskox to prevent conflicts from occurring.

Within the national park, human-muskox interactions are typically conflict free, so long as the humans visiting the national park respect the recommended guidelines of keeping 200m distance. However there have been several instances where humans have gotten too close to the muskox, and this has resulted in humans being charged and hit by the muskox. In the conversations with participants, nearly all the participants mentioned that they had either heard indirect stories or had personal connections to human-muskox conflict. While nearly all the participants had similar stories of these conflicts, depending on the social group they were a part of (safari guide/public/government official, experienced/unexperienced), the way the threat of muskox conflict was interpreted had some variance. With the interviews with members of the public who had little to no experience of being around the muskox, expressed how they were quite scared of the muskox and were unsure of how act around the muskox. This was shown in the below passage from Participant 1.

Because when I was before that workshop, I, I was, I'm quite scared about these animals. I know that they are quite huge, and they can be dangerous. And I didn't know how to act around them.

In addition to the perspectives which had been obtained through the interview process, other conversations with Norwegians regarding the muskox, also showed that many people held an underlying perception of the muskox as being a "dangerous" animal. Of these people, very few of them had ever seen or been around muskox, yet still held this representation of the animal. This can be partially attributed to how the muskox has been portrayed within news media. A simple search of the muskox in Norway will often return several stories about the conflicts between the muskox and humans. While the media portrayal of the muskox has resulted in a fear of the muskox, publications by the government on the muskox insist the animal is safe and peaceful, so long as humans respect their distance to the animal.

While interviewing with individuals who had significantly more experience being around the muskox, felt significantly safer when being around the muskox, with one safari guide saying the muskox are completely safe to approach so long as you can properly read and understand their body language. During the interviews with governmental officials, when asked about the human wildlife conflicts, the responses were a bit more comical as they recognized there is the potential for conflict if humans get too close to the animals, however the end outcome from the conflicts is usually not the severe.

Park Manager 1:

It's (the muskox) not that dangerous but if you get too near, there must be some hesitation because I see people go very near and sometimes without accidents happening. Usually then of course and what usually happens in that muskox usually attack people who naturally try to run and then they just usually go in the butt, so usually locally the muskox is satisfied in one hit, so people end up with a very sore butt nothing more.

Park Manager 2:

The notion that many local people have stated that it is dangerous, it's I think that's exaggerated. Just if you've behaved, sensible usually, there's no problem. All right.

The responses from these three social groups are reflective of how the construction of social representations is largely based on the knowledge and environment of the social group. While the composition of each of the social groups had similar demographic

backgrounds, their views and representation of the muskox being a “dangerous” animal, varied greatly on the individual’s level of knowledge had of the animals.

#### 5.3.4 Management of the Muskox

During the interviews with members from the both the County Governor’s office and the National Park, discussion also focused on how the muskox are currently managed. As was highlighted in the Theory section 3.2.3, during reintroduction efforts, it is common for reintroduced populations to typically receive higher levels of direct management than seen with native species.

Interviewer:

Do you feel that like the muskox received kind of a more hands on management and other native species do?

Park Manager 1:

Yes. It's very little population. On a small area. It's, it's easy. It's easy to do with management. And we, as I said, we have very little resources and use very little resources. So, then they can we are allowed to be more hands on because it's so little.

The above exchange works to confirm the theoretical statement of re-introduced species receiving greater levels of attention and management. While there is an increased level of attention, the participant also discusses how while the financial budget for the management is quite limited, due to the small population size the managing bodies are still able to be actively involved in monitoring and managing the population. Within Norway the other main animal group which receives this level of attention would be the large predators, however management efforts for these animals receives significantly higher levels of funding, largely due to the greater impact the animals have on humans.

Interviewer:

Are there other animals in Norway that have similar levels of kind of hands-on management?

Park Manager 2:

Not many, maybe a few. You write wolves. And maybe some bigger predators? Maybe, and maybe some are very, very rare, other species where we have in very small area or, or very few individuals. They have us some species if you if you if you compare the big predators. It's not what to say. Big predators have lots of resources to follow. And therefore, we get quite good. Hands on management on big predators. We can say the same for the muskox. But that's only because it's so small. Right? I think the cost is low. Right? The cost of big predators is very big.

This small budget for management has some consequences, especially seen when looking to address the issue of the limited genetic diversity. The issue of genetic diversity was a commonly identified problem according to the questionnaire respondents as well as interviews with park visitors.

Interviewer:

Are you looking at solutions to address the issue of reduced genetic diversity?

Park Manager 1:

No, no, no, we don't. That's not a topic. Now, it might be in the future, but not but not now. The muskoxen management has very little resources. There are not many who has, we can't do so much. Because there are no economics to manage the muskox and if you wanted to work with genetic diversity, we had to have some resources to do that... We



want to have a plan about how to do it. And we have maybe where should they catch and bring the muskox and we don't have the money to do it.

Following this excerpt, the participant returned to idea and representation of the muskox as being a "political species" and when the genetic diversity problem would be addressed, it would need to be because of strong political will. The participant also further commented on the challenges to get funding due to the muskox being an introduced species, and governmental bodies are hesitant at the idea of bringing more foreign species into the country.

## 6. Discussion

The theory of social representations investigates the shared understandings and perspective towards a specific object held by a social group (Wagner et al., 1999). The results presented in chapter 5, look to describe the social representations of muskox, which are held by various social groups—Park Visitors, Muskox Safari guides, and Park Managers, all of which frequently interact with the Dovrefjell-Sunndalsfjella National Park. Within the representations held by the social groups, there was an emergence of some common representations of the muskox which are held by members of all the social groups, along with representations which are unique to each of the social groups. The results in Chapter 5, go further to illustrate attitudes towards the muskox which are held by individuals within the social groups. While attitudes are generated and held at an individual level, they also help to build and support more commonly held social representations. The usage of Social Representation theory was used to answer the following questions regarding the muskox population at Dovrefjell-Sunndalsfjella National Park:

1. What are the social representations of Muskox? Do they differ amongst different social groups?
2. How do the Social Representations of the Muskox population in Dovrefjell-Sunndalsfjella National Park, compare to populations of muskox found in other locations?
3. How have the Muskoxen social representations influenced the ways in which the animal has been managed by the government?

This chapter will further discuss the results to help define the social representations held by social groups towards the muskox, tying back the findings to the theory presented in chapter 3. The discussion will also look to examine the role the development of social representations has had on influencing the development of management policies relating to Dovrefjell-Sunndalsfjella National Park and the muskox population kept within it.

### 6.1 Construction of the Social Representation Categories

#### 6.1.1 What are the Social Representations of Muskox?

In the creation of a social representation for an animal, traditionally there is a need for a long-standing relationship with the subject animal. This can be seen in Figari and Skogen (2011) when looking at the construction of the social representation of the wolf. Within this study, there has been long term interactions with humans and wolves. These interactions have primarily represented through conflicts between farmers and wolves, which prey on livestock. These long-term interactions with the animals has resulted in the creation of more engrained cultural understandings. As exemplified by the wolf, the development of engrained cultural representations can stem from conflict, can also be the result of an animal achieving a so called "Icon" status. This iconification or totemization of an animal has also been represented throughout literature when looking at animals such as the Whale, Elephant, and Giant Panda (Kalland, 1993; Peterson, 1993; Ris, 1993). With these animals, there is a reoccurring trend of focusing on the extraordinary animal, as opposed to the mundane, or more common animals. As described by Kalland (1993), animals which do not fit into or follow the normal classification—whales as a fish without scales or elephants which are grazing animals without hooves, are regarded as having special characteristics and in turn special

significance. The muskox of Dovrefjell is like this, in that they are an animal which does not naturally fit within the local ecosystem.

In the case of the muskox, the determination of the social representation of the animal is very much dependent on the location of the animal. In countries such as Canada, where the species is endemic, the muskox has been able to engrain itself into indigenous culture, who have been living there for thousands of years. Within these cultures, the muskox has a vital socio-cultural value, along with having significant economic, environmental, and nutritional value. For instance, the usage of the muskox's horns, hides, and bones are all utilized in the creation of tools, crafts and art which are all deeply rooted within socio-cultural traditions (Kutz et al., 2017). Contrasting, the population in Dovrefjell-Sunddalsfjella National Park has only existed for approximately 80 years, a short time for the deep-set connection found in areas where the muskox has existed for thousands of years. As a way of creating a better understanding of the creation of the current social representation of the muskox, the rationale behind why the muskox was introduced into Norway needs to be examined.

As mentioned in previous sections, there is no definitive motivation behind the introduction of the animal into Norway. Some literature suggests that the muskox was brought from Greenland due to the remorse felt by hunters, who had been harvesting adult muskox for their wool and meat, leaving the young and juvenile muskox behind. Another perspective stems from the idea of achieving a form of Polar Imperialism. The ability to trap, transport and sustain a population of polar species shows Norway's arctic supremacy and dominance over nature (Roberts & Jørgensen, 2016). Through interviews with parks managers, who have high levels of insight into the government's motivations, it would indicate that it is a combination of both reasonings. Additionally, there was also motivation to bring the animals into the country to feature in zoos.

#### **6.1.1.1 Core Representations of the Muskox**

The generation of social representations are a creation and a reflection of the social group. Looking at and determining the social representations of the muskoxen of Dovrefjell, three major social groups—who are connected to the muskoxen, were examined. The three groups, Park Visitors (both Norwegian and international), Muskox Safari Tour Operators, and Park Managers were chosen. Each of these groups have unique and distinct perceptions and background which influence the way in which they view and represent the muskox. While each of these groups have unique interpretations of the muskox, they also share common themes both within and between their social group. These common themes work to determine, what Abric describes, as "Core Representations." In addition to the social representations held by each social group, the peripheral representations can also include attitudes and tolerances held by individuals.

#### **SYMBOL OF THE PARK**

With the social groups selected, all of them shared an underlying theme of the muskox as being a symbol for the park. While this was most evident with the Visitor social group, both the managers and muskox safari tour operators also highlighted the relationship of the muskox with the national park. From the managerial perspective, the decision to use an image of the muskox as the cover image for the parks management plan exemplifies this. While the informant expressed his own personal disliking of the use of the image as opposed to a native species such as the reindeer, the photo's usage would suggest the overall opinion of the park management social group would be of the muskox being strongly associated with the national park. When looking at the national park visitors

social group, the muskox's status of being a symbol of the park is further solidified. Evidence of this was revealed from the results of the questionnaire which asked about people to associate different animals with the national park. The muskox being given the highest level of association within the park, further goes to show how the muskox has merged as being of a symbol of the park.

Beyond the national park into the communities surrounding the national park, the muskox has also had an impact. The Dovre Kommune coat of arms was redesigned in 1986 to feature the muskox. This relatively recent change to display the muskox as the symbol of the community goes onto reflect how the local populations have come to value the presence of the animal (Dovre Kommune, 2020). Other local companies, such as the outdoor clothing brand Dovrefjell, have also chosen to use the muskox as a symbol to reflect their business. The combination of both the name "Dovrefjell" and the use of the muskox as a symbolization further strengthens the argument of the muskox being a representation and symbol of the National Park.

## TOURISM

Beyond being a symbol of the national park, another common representation of the muskox shared between all the social groups reflects the muskox as a driver for tourism. The use of the muskox within the advertising campaigns which look to target and provide information to tourists will focus on promoting the presence of the muskox within Norway. During discussions with members from all social groups, the concept and draw of tourism brought by the muskox was heavily repeated by each of the groups. For the Muskox Safari tour operators—the most direct beneficiary of tourism, the presence of the muskox within Dovrefjell is intrinsically linked with the long-term success for the businesses and industry. For the visitors to the national park, the muskoxen were the predominate reason for individuals to stop and visit the national park. Lastly for the National Park Managers, the tourism of the muskox has brought economic growth to the surrounding communities, which has motivated governmental bodies to work to ensure that the muskox can remain inside of the park.

The universal sharing of this social representation is indicative of the primary social representation of the muskox as it being a symbol of tourism. The representation of tourism, which is associated with the muskox, along with the revenues which are generated, is one driving reasons behind why the population of muskox are still managed within the national park. As was highlighted during the interviews with both Participants 7 and 8, the financial benefits to the local communities have created political incentives for governments to advocate for the population to exist. If the muskox's tourism pull was to disappear, there is a possibility the muskoxen could be removed from the park and Norway as a whole. This creates a dichotomy and question of whether tourism exists because of the muskox, or does the muskox exist due to tourism. Ultimately, the answer to this question is that both are heavily interlinked together, and the extent of which both concepts exist is based on the presence of each other. The concept of tourism however has the potential of still existing without the muskox population, due to the pre-existing cultural connection to the landscape. However, the level and popularity of tourism in the area would arguably not be at the same level as it is now. On the other side, if tourism in the area would disappear or decrease, the financial and political motivations to keep the muskox would likely be overshadowed by biological motivations to remove introduced species from natural ecosystems.

### 6.1.1.2. Peripheral Representation

#### Visitors

For the park visitors, this social group is constituted of 2 smaller sub social groups, Norwegian Visitors, and International Visitors. As a result of the differing cultural backgrounds of the individuals which make up the international group compared to the Norwegian social group, the way in which the muskox is represented will differ.

Within the international visitor social group, the dominate social representation is based on the tourism of the muskox. Many of the feelings and representations that have been constructed by this group have come from through media and advertisements influences, which tend to focus on the tourism component of the muskox. Some justification behind this social groups predominate representation of tourism can be attributed to the groups relative lack of historic cultural connection with the muskox. The creation of social representations is largely influenced by the community and environment a social group is located in. In the case of international visitors to the Dovrefjell-Sunndalsfjella National Park, for many the first time, and potentially last time, interacting with the muskox and visiting the national park is a once in a lifetime adventure. As a result, the way in which they form their representation of the muskox is based on a relatively short exposure. While there is potential for a better understanding of the history and connection to the land, through educational teaching created by Safari guides and information posted by the government, there is a low possibility for the international visitor social group to develop more in-depth representations of the muskox.

Contrasting the international visitors, the Norwegian visitors held a predominate representation of the muskox as an iconic symbol of the Dovrefjell-Sunndalsfjella National Park, as well as the local communities. This symbolic icon status of the muskox is another core social representation of the muskox held by the park visitor, shown through multiple instances as described in the results section. When examining the findings from the interviews with the Visitors, many of the respondents reflected on how they strongly associate the muskox with the national park. During informal discussions, some photographers also made comments about their desires to capture a photo of the muskox in the winter with Snøhytta—the tallest and most prominent mountain in the Dovrefjell mountain range, in the background. To them, having such photo would be a strong embodiment and representation of the region, as well as Norway as a whole. This relationship with the muskox and the local mountains is an important connection to make, as it further strengthens the linkage between the muskox within the local environment. The mountains within Dovrefjell also have significant cultural value to the Norwegian people and is engrained within the Norwegian constitution with the expression of “United and True until Dovre falls” (Nasjonalparkriket, 2020). To other people, they viewed the muskox as being a symbol of the Norway as a whole, a tough and rugged animal which can face the hardships of winter. Both statements help to further illustrate how the muskox has obtained this cultural representation for the local area.

From the results another important representation is the perception of the muskox as a “Urdyr”, which means “primordial animal” in English. Words such as “Prehistoric”, “Early”, and “Ancient”—synonyms of “Primordial”, were also used to describe the muskox, further draws linkages between the muskox and a historic time. This was further solidified from the interviews with the Norwegian Visitors, as many of them described the muskox to be a part of Norway’s history. Many Norwegian Visitors linked

the presence of the muskox to the Viking age. The association with Norway's Viking history is especially interesting, since the muskoxen were extinct long before the start of the Viking age. However, this connection is more symbolic, as both (the muskox and the Vikings) are reflective of Norway's history. This connection to Norway's history can also be linked to the concepts promoted by Roberts and Jørgensen (2016), which focus on the use of polar species as the establishment of Polar imperialism, tying into Norway's age of exploration.

### Muskox Safari Operations

The muskox safari guide social group is unique, as they share some similarities with the park visitors, as both groups look to gain benefit from using the park. The predominate representation of the muskox to this social group is heavily linked to the social representation of the muskox being a tourist symbol, as the social group's financial success is heavily linked to the tourism generated by the muskox. based on the touristic nature of the muskox. This is largely due to the financial success being linked to the tourism which is brought in by the muskox. In addition to perceiving the muskox as the driver of tourism in the region, members of the social group also tend to share similar representations as the Park Visitors, due with the way in which they choose to interact with the park.

The educational role played by the Muskox Safari guides and operations, places them in a position where they can educate visitors and shape the visitors' views towards the muskox. This raises a question of whether the representation of the muskox held by visitors is created from their own experiences or if it has been influenced by the tourism advertising and from the knowledge shared by the guides. In the instance of the international park visitors, who do not have an existing relationship with the national park, the knowledge passed on by the guides helped shape their own personal representation of the muskox. This was evidenced through the questionnaire response by one tourist from Australia, who was surprised to learn that while the muskox is a vital component of the park and has significant economic and cultural value, it is still listed on the "blacklist"—the old terminology used by the Norwegian government for non-native species. This usage of the term "blacklist" has the potential to generate negative connotations towards the muskox, which further illustrates the importance of educators to use proper, and updated language when educating individuals who do not have previous knowledge.

### Managers

When looking at the views held by the National Park and Environmental Managers social group, and by extension the Norwegian Government, the social representations of muskox focused on the motivations for continuing the management of the muskox in Dovrefjell-Sunndalsfjella National Park. The social representation of the muskox created by this social group has a greater focus on the status of the muskox as an introduced species. Having this representation of the animal as the primary representation, this differs from the views held by the park visitors—the majority of whom tend to overlook this status in their desire for the animal to remain within the park. As a component of the representation of the animal being an introduced species, is the belief that the muskox should not hold such a dominate role as being the "star" attraction in the marketing of the national park. Both respondents from the social group had expressed how within their social representation of the Dovrefjell-Sunndalsfjella National Park, the reindeer is the symbolic species which represents that park.

This representation of the muskox being an introduced species also has larger impacts on the decision-making process for the management of the population in the national park, on both long- and short-time scales. When looking at the long-term management of the muskox population, the motivations to address concerns of low genetic diversity—an identified long-term issue, are quite small. This is compounded by Government officials being hesitant to bring more animals into the country which, in their opinion, do not belong there. From a short-term management perspective, the status and representation of the muskox being an introduced species has also impacted the tolerance levels of the management officials. Under the current management perspectives, the muskox population is tolerated to exist within the core management area, albeit at an oppressed population level, however when animals migrate outside of the core area, the animal's representation further evolves into becoming a nuisance.

This concept of an introduced animal becoming a nuisance has been commonly seen throughout the world, as the animals can present negative impacts on people's daily lives. This can be exemplified within Canada when looking at the introduced populations of muskox found within Quebec. While the muskox populations found in the northern territories of Canada have strong cultural significance to the local people, people living in Northern Quebec view the muskox as having a negative impact on their daily lives. They feel that the muskox has disturbed the movement patterns of the caribou, as well as presenting safety hazards for people out walking in nature.

When looking at the tourism component of the social representation held by the governmental managers, it was described as a component of the larger management picture. To this social group, the bigger and more dominate representation deals with the animal being an introduced species. The impacts of the tourism brought by the muskox were viewed as being a challenge towards the overall management goal of protecting the natural ecosystem. While these challenges presented by tourism exist, the group did recognize the benefits brought by tourism does bring benefits for the local areas.

The benefits, specifically economic, created from tourism are felt most directly on the local level. As such, these benefits have influenced the actions of local politicians to advocate for the development and inclusion of the muskox into the parks management plans. As a result of this political pressure, members of the park managers social group have also begun to recognize the muskox as being a political species. The use of political will to shape how a wildlife population is managed, is a concept discussed by Ris (1993) when looking at how political will was need to evolve behaviours towards conservation, and make the shift from the whale hunting to whale based tourism.

### **6.1.1.3. Peripheral Representations as a Reflection of Individual Attitudes**

Within the concept of Peripheral Representations, the role of individual experiences and histories has more influence on the generation of the representation. The characteristics of the Peripheral System as outlined by Abric (1993), permit the inclusion of individual attitudes in the generation of these representations. Because of this ability to include individual attitudes, there is the potential to start blending individual attitude studies with social attitude studies.

When looking at the muskox, one example of peripheral representations is the fear of the muskox, which was held by some of the individuals in the park visitors social group. The feeling of fear towards the muskox is viewed more as an individual attitude as

opposed to a social representation as it was not a common theme present amongst many of the park visitor social group. With the individuals who had expressed their fear of the muskox also had mentioned they did not have much experience around muskox and their attitude towards the muskox was derived largely from how the animal had been portrayed in the media. While these attitudes were only held by a select few of social group respondents, they could also be reflective of a larger community of individuals.

Social tolerance theory is also applicable when looking at individual attitudes towards the presence of the muskox. The park managers had mentioned the creation of the population cap for the muskox was developed to mitigate human-muskox conflicts, and that members of the local communities found that muskox escaping from the park were negatively impactful on their daily lives. While this view was not supported during the interview with the one park visitor who lived in the surrounding communities, this exemplifies how social tolerance thresholds are often very dependent on the individual. While the one local respondent did not express having issues with muskoxen leaving the national park, other locals who might not enjoy spending time outdoors, or have pre-existing fears of the muskox could perceive emigrated muskox entering their gardens negatively.

#### **6.1.1.4 Representations in Conflict**

While there are social representations of the muskox which are shared by the different social groups, there are also points in which the unique representations come into conflict with each other. One of the clearest examples of this is seen with the differences in the representations between the park visitors and managers social groups. As mentioned in the descriptions of each of social groups, the importance and cultural value, which was held by the Norwegian park visitors, was viewed as being seen as the same from the managers perspectives. From the managers' perspectives, due to the relatively short time that the muskox has been in Norway, there has not been enough time for Norwegians, to create any form of cultural connection, as can be observed with the Indigenous people of Canada and Greenland. This conflicts with the social representation held by the park visitors, as seen by their description of the muskox as linking back to their ancestral history as well as the polar legacy of Norway.

## **6.2 Social Representations in Canada**

### **6.2.1 Themes of Social Representations**

The use of thematic analysis on the Canadian muskox management documents aimed to understand how the representations held by local communities are factored into the management policy. The use of the same 'representation themes' used with the Norwegian muskox data was applied allowing for a comparison on the similarities and differences in the ways in which the animal is represented.

When looking at the representation of the muskox as a symbol of the landscape, there was very little which would be classified into this category. However, this could be largely attributed to the culture of the Inuit and other indigenous communities being intrinsically linked with the natural landscape. Other themes—political and touristic, were highlighted throughout the documents. The theme of the muskox as a political animal was discussed in some of the management documents, with muskox management being a tool for the federal government to claim sovereignty in the arctic. The involvement of the government was also highlighted regarding the impact of



management policy on the cultural connections of the Inuit communities. The tourism theme was also highlighted within the management policy as an ability for to develop economic opportunities for the northern communities through big game hunting and wildlife viewing tourism. While these opportunities are identified as potential economic drivers for rural communities, there is also a cultural dynamic which could disincentivize local members. Within the cultures of the Inuit, muskoxen are at the core, a resource. To many, the idea of tracking animals for wildlife viewing purposes, without the motivation of killing the animal for food, is in violation of their cultural beliefs. This can lead to an issue as people who are going on a wildlife viewing tour are often not familiar or comfortable with the practices of killing animals and would be less likely to go on a tour where the killing of an animal is involved. Within both the political and touristic themes, there was a strong influence of the cultural connection of the local communities towards the animals.

## 6.2.2 Traditional and Cultural Knowledge

The cultural connection to the muskox was the most dominate theme in the management documents. As mentioned previously, the muskox is perceived as being a resource to the Inuit and other northern indigenous communities. Through the examination of the management documents, all of the documents made direct reference for the need to maintain the longevity of the muskox population so that it could remain as a harvestable resource. While the maintenance of the muskox for harvestable purposes is to help secure food security, there is also a need to keep the animals at sustainable harvestable levels in order to ensure the transfer of cultural practices. In the management documents created by the Northwest Territories and Nunavut governments, these cultural practices were referred to as "Traditional" and "Cultural" knowledge. The concepts of traditional and cultural knowledge can also be viewed as analogous for social representation, as they are based upon the shared and common views towards a specific animal or object. The role of traditional knowledge can constitute many different forms, be it as the knowledge of safe muskox hunting practices or knowledge on the ecological dynamics of the muskox population. These ecological dynamics are based on generations of first-hand experience observing migration patterns, the impacts the animals have on others, as well knowledge on population fluctuations. This knowledge has also been used in the creation of management documents, to provide better insights into understanding if population decreases are naturally occurring or the result of new, anthropogenically influenced impacts.

### 6.2.2.1 Loss of Traditional and Cultural Knowledge

Within the discussion of cultural and traditional knowledge within the management documents, there was also a focus on the loss of knowledge caused from the prohibition on hunting or absence of muskox from the landscape. Resulting from the 1917 policy, which prevented the hunting of muskox for subsistence purposes on the grounds of conservation, some communities were prohibited from harvesting muskox. While this policy was only implemented for just over 50 years, the effects of community members being separated from the animals has led to long lasting cultural changes. Within the communities which have been separated from the animals, individuals are less likely to want to engage in cultural practices such as hunting for muskox.

## 6.2.3 Comparison with Norwegian Representations

In examining how the perceptions of the muskox compare between the Inuit communities of Canada and the different social groups in Norway, there are both

similarities and differences. With both communities cultural, touristic, and political representations were present, albeit with varying levels of significance. The political aspect of the muskox in both countries is largely based on ways attributed to the motivations and actions of the government. In the Norwegian case, the tourism representation was the most dominant theory within all of the studied social groups. While in Canada, the concept of tourism was viewed as being a newer, and less readily adopted representation. This variation can be attributed to the cultural differences between the different communities (Canadian and Norwegian), with the Norwegian muskox being used as a tourism attraction since their introduction, while the northern Canadian people perceive the muskox as a consumptive resource. The cultural component was a major theme in the representation of the muskox in both of the study groups. The Norwegian Park Visitor social group, individuals had highlighted how the muskox had strong ties to Norwegian culture and the landscape, however members of the Park Manager social group did not share this same feeling. From the interview with Park Manager #1, reference was made towards the cultural attachment of the Inuit communities of Canada, with the respondent viewing these cultural representations as being more authentic.

## 6.3 Influences on Management

When looking at how the social representation of the muskox has influenced the management of the park and the population of the muskox, there are two main areas of management. The first area looks at the direct management of the muskox population, and how social perceptions towards the muskox have been used as the basis for the creation of the core management area and the development of the muskox population cap. The second influence of social representations on the management of the national park, is the management of tourism.

### 6.3.1 Management of Muskox Population

The impact of social representations on the management of the muskox population is evident enough with the fact that the muskox is still allowed to exist within the national park, along with initiatives coming from higher levels of government to ensure that muskox populations will continue to be monitored and managed. While individual managers may not share the same feelings of the muskox as some of the Norwegian park visitors, the status of the muskox as being a symbol of the national park has been recognized by the higher governmental bodies.

Under the current management methods, the management officials are looking to incorporate the views and opinions held by the community. From the interview with the participant with the national park board, it was described that the communities which surround the national park are often consulted when new policy decisions are being made, however they do not have any form of direct influence on the management of the park. While the public does not have any direct involvement into the decision-making process, the role of the National Parks Board is also to advocate on behalf of the local communities. Despite this, the Norwegian people, represented through the Norwegian park visitors, had expressed how they felt pride that the government is caring to maintain the muskox population. Having pride in the management of the species also ties into Aquino et al. (2021) views on how community involvement and pride can bring about greater support for the management of wildlife areas.

The development and implementation of the population cap is another example of the way the social representation of muskox can influence the management policy. While the

representation of the muskox being a dangerous animal is not the most dominant social perception held by selected social groups, it was still an issue which was highlighted by members of both the visitors social group as well as park managers. From the visitors' perspective, the muskox can be viewed as being a dangerous animal, especially if they have not had much exposure to the animal and their perceptions were shaped prior to visiting the park by news media reporting on conflicts. The population limit was also developed by the managers to help address issues caused from muskox leaving the park and entering the surrounding communities.

### 6.3.2 Management of Tourism

The role of social representations has also influenced the way in which the tourism of the national park is used. As highlighted by Aquino et al. (2021), the utilization of the social representations held by the local community into the management of the national park, has the potential of allowing for local citizens to feel more attached and involved into the management of the environment. This could allow for local citizens to overlook and develop higher levels of tolerance towards conflicts caused by emigrating muskox. Locals could see the benefits associated with conserving the muskox, and how killing escaped muskox can result in negative perceptions and impacts on the local community.

Over the last 20 years, there has been an upwards trend in terms of the number of tourists visiting the Dovrefjell-Sunndalsfjella National Park (Rangbru & Seljevoll, 2017). While this increase in population growth can work to provide economic growth, it can result in the destruction and disturbance of the ecosystem, with specific impacts on the migration corridors for wild reindeer. This tourism pattern and the resulting environmental damages could be seen to be contributing to the theory of the tourism paradox. While there is this ecosystem threat, efforts have been made by the National Park Board and other management bodies to try and concentrate tourism to a confined region within the Dovrefjell-Sunndalsfjella National Park. These efforts have the intention of promoting tourism growth, while lessening the impact on the remainder of the park. This region and trail network has been fittingly named "The Muskox Trail", as it is located in a region of the park which is both close to the main highway as well being in areas which are commonly frequented by muskox (Dovrefjell Nasjonalparkstyre, 2022). The creation and naming of this trail network also goes on to show the centrality of the muskox to the region's touristic attraction. On the webpage for the Muskox Trail, there is additional information stressing the importance of tourists staying on the marked paths to prevent any disturbances to the muskox, reindeer, and other animals within the park.

The popularity amongst international tourists also raises questions regarding the overall sustainability of tourism. As highlighted by all three of the social groups, there is a high number of tourists coming from mainland Europe (Germany, the Netherlands, France). Tourism from Europe, and the rest of the world, has become a major contributor towards Norway's GDP, and as a result the Norwegian government has made increasing efforts to promote tourism to the national park. While these efforts can bring in greater revenues to both the national and local economies, it also generates increased stress on the well-being of ecosystems. This raises the question of what national parks are for— environmental conservation or as tourist attractions? This is in addition to being in an apparent contradiction to global efforts to minimize carbon emissions.

## 7. Conclusion

This study of the muskox population within Dovrefjell-Sunndalsfjella National Park has utilized Social Representations theory to examine and determine the representations held by social groups who are in direct involvement with the national park. Along with examining the social representations for the social groups, this thesis also looks to develop an understanding how the representations have been able to influence the management policy relating direct to the muskox and the national park region as well. Through the responses from the questionnaire, and the insights provided from the interviews with members of different social groups, there was the emergence of two common representations of the muskox. The first representation was of the muskox as being a symbol for the Dovrefjell-Sunndalsfjella National Park. While all three social groups represented the muskox as being a symbol of the park, Park Visitors had the strongest feelings in representing the muskox and the park together. Individuals within this social group also view the muskox as being a symbol not only of the national park, but also as a symbol of Norway as a whole. The second common representation was that the muskox was a symbol of tourism. This is a key representation as the efforts to maintain the muskox population in Norway are largely due to the touristic pull of the animal. The attraction of the muskox is beneficial for the local communities, as it draws people from around the world to visit and stay in the surrounding communities. When looking at social group specific representations, the park visitor social group tended to associate the muskox with having a greater and deeper meaning than was seen with the Park Managers and Tour operators' social groups. To the park visitors, the muskox represents the past, and Norway's history. This was shown with the description given by the Norwegian questionnaire respondents who symbolized the muskox as being "primordial animal" and relates back to the Viking age. With the park managers social group, the muskox is represented as being a political animal, with the motivations to maintain the muskox population being driven from political motivations. Park Managers also placed higher levels of emphasis on the muskox being an introduced species. This classification, along with the managers' personal feelings, could also be reflective of the motivations for the long-term management.

As the Norwegian muskoxen are an introduced species, this study utilized a thematic analysis to better understand the social representations in countries where the muskox population has existed for thousands of years. In conducting the thematic analysis, management documents from the Canadian territories of the Northwest Territories and Nunavut were examined. From these documents, it was uncovered how the continued presence of the muskox has resulted in the creation of deep-set cultural attachments towards the muskox. Within these communities, the muskox plays a vital role in providing food security resources as well as being tied into cultural mythology. There is also evidence the impact of even short-term removal or absence of a species can have on the cultural value and attachment of a community. In seeing how even short-term removal of a species can have on a community's attachment, it raises questions of how strong of a connection exists between the Norwegian population and the muskox.

When examining how the social representations have influenced the management of the species, it is evident that the role of tourism has been very influential on the management plans. The development of muskox themed tourist attractions such as the "Muskox Trail" to help promote wildlife viewing tourism while also working to mitigate environmental degradation. The attraction of the muskox also can allow for opportunities

to help educate individuals. The inclusion of the local perceptions into the development of environmental management plans are the building blocks in creating comprehensive and inclusive plans (Aswani et al., 2015). Social Representations Theory can be a useful tool in helping to determine local perceptions, and their viability and applicability regarding environmental management has been proven in recent years. By acknowledging and including the local perceptions of the muskox, future management plans, which garner high levels of support from the local population, can be developed.

## 7.1 Space for Future Study

This study using Social Representation Theory to establish common perceptions of the muskox has been able to establish core representation from the studied social groups. In order to understand the representations of the social groups, the information obtained from the informants was vitally important. There are, however, some limitations with this study. First, the majority of the informants were park visitors, with only a very limited number of respondents being local to the communities surrounding the study area. While the information that is obtained from these respondents is useful in understanding a broader, nationalistic representation of the animal, the inclusion of more local perceptions could provide more information on the local perspectives towards the presence and management of the muskox. While this group was reached out to, through the use of community specific social media groups, there was minimal responses from the group. The inclusion of the study of the policy documents pertaining to the management of endemic muskox populations revealed deep set connections with the muskox. This could be another interesting avenue to explore, in attempt to define more concrete representations of muskox in both introduced, reintroduced and endemic locations.

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# Appendix 1: Information letter to Park Managers

## **Purpose of the project**

This project aims to understand how local and national sentiment towards nature and wildlife influence the decision-making process for governmental bodies in Norway. The Dovrefjell National Park holds significant cultural value to Norway, and the Musk Ox population found within the park have emerged as a local symbol. This purpose of the study will investigate how these perceptions have influenced the creation of management strategy for the Dovrefjell National Park.

This project will be used as part of the completion of a Master's thesis.

## **Who is responsible for the research project?**

Norges Teknisk-naturvitenskapelige universitet (NTNU) is the institution responsible for the project.

## **Why are you being asked to participate?**

To understand local perceptions and sentiments towards the national parks, stakeholders and users of the National Park have been selected. The management of National Parks falls under the realm of the government, and the respective National Park Board. As a result, understanding the decision making process in implementing these policies is important.

## **What does participation involve for you?**

Participation in the research project would include being involved in an 60min interview, that will be conducted either in person or digitally through a phone call. In both cases, the audio from interviews will be recorded. Most questions in the interview will be focused on the exploring how the Park Management Board manages Dovrefjell National Park in addition to seeing how the Board takes in suggestions from local business as well as factoring tourists and locals feelings towards the national park.

## **Participation is voluntary**

Participation in the project is voluntary. If you chose to participate, you can withdraw your consent at any time without giving a reason. All information about you will then be made anonymous. There will be no negative consequences for you if you chose not to participate or later decide to withdraw.

## **Your personal privacy – how we will store and use your personal data**

We will only use your personal data for the purpose(s) specified in this information letter. We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act). Responses will be stored in a protected offline storage system and will only be accessed by researchers



directly involved in with the project. The recorded interview will be transcribed into textual form, and any other personal information will be further removed from the transcribed text.

### **What will happen to your personal data at the end of the research project?**

The project is scheduled to end on June 30th, 2022. At the end of the project the audio recording will be erased, however the transcribed text will be archived for future research. The archived text will not have any identifiable content associated with it.

### **Your rights**

So long as you can be identified in the collected data, you have the right to: - access the personal data that is being processed about you  
- request that your personal data is deleted  
- request that incorrect personal data about you is corrected/rectified - receive a copy of your personal data (data portability), and

- send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding the processing of your personal data

### **What gives us the right to process your personal data?**

We will process your personal data based on your consent.

Based on an agreement with Norges Teknisk-naturvitenskapelige universitet, NSD – The Norwegian Centre for Research Data AS has assessed that the processing of personal data in this project is in accordance with data protection legislation.

### **Where can I find out more?**

If you have questions about the project, or want to exercise your rights, contact:

- Norges Teknisk-naturvitenskapelige universitet via Jørund Aasetre ([jorund.aasetre@ntnu.no](mailto:jorund.aasetre@ntnu.no))
- Our Data Protection Officer: Thomas Helgesen ([thomas.helgesen@ntnu.no](mailto:thomas.helgesen@ntnu.no))
- NSD – The Norwegian Centre for Research Data AS, by email: ([personverntjenester@nsd.no](mailto:personverntjenester@nsd.no))

or by telephone: +47 55 58 21 17. Yours sincerely,

Bret Collins  
Project Leader (Researcher/supervisor)

# Appendix 2: Information letter to Tour Operators

## **Purpose of the project**

This project aims to understand how local and national sentiment towards nature and wildlife influence the decision-making process for governmental bodies in Norway. The Dovrefjell National Park holds significant cultural value to Norway, and the Musk Ox population found within the park have emerged as a local symbol. This purpose of the study will investigate how these perceptions have influenced the creation of management strategy for the Dovrefjell National Park. To gain

This project will be used as part of the completion of a Master's thesis.

## **Who is responsible for the research project?**

Norges Teknisk-naturvitenskapelige universitet (NTNU) is the institution responsible for the project.

## **Why are you being asked to participate?**

To understand local perceptions and sentiments towards the national parks, stakeholders and users of the National Park have been selected. To understand the perspectives of groups who commercialize National Parks, Musk Ox Safari tour operators and local business owners have been selected.

What does participation involve for you?

Participation in the research project would include being involved in an 60min interview, that will be conducted either in person or digitally through a phone call. In both cases, the audio from interviews will be recorded. Most questions in the interview will be focused on the exploring how you (as a business owner) relate to the Dovrefjell National Park, and how you feel that the management of the park has impacted your business.

## **Participation is voluntary**

Participation in the project is voluntary. If you chose to participate, you can withdraw your consent at any time without giving a reason. All information about you will then be made anonymous. There will be no negative consequences for you if you chose not to participate or later decide to withdraw.

## **Your personal privacy – how we will store and use your personal data**

We will only use your personal data for the purpose(s) specified in this information letter. We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act). Responses will be stored in a protected offline storage system and will only be accessed by researchers directly involved in with the project.

The recorded interview will be transcribed into textual form, and any other personal information will be further removed from the transcribed text.

## **What will happen to your personal data at the end of the research project?**

The project is scheduled to end on June 30th, 2022. At the end of the project the audio recording will be erased, however the transcribed text will be archived for future research. The archived text will not have any identifiable content associated with it.

### **Your rights**

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- request that incorrect personal data about you is corrected/rectified
- receive a copy of your personal data (data portability), and
- send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding the processing of your personal data

### **What gives us the right to process your personal data?**

We will process your personal data based on your consent.

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Our Data Protection Officer: Thomas Helgesen ([thomas.helgesen@ntnu.no](mailto:thomas.helgesen@ntnu.no))

NSD – The Norwegian Centre for Research Data AS, by email:  
([personverntjenester@nsd.no](mailto:personverntjenester@nsd.no)) or by telephone: +47 55 58 21 17.

Yours sincerely,

Bret Collins  
Project Leader  
(Researcher)

# Appendix 3: Information letter to Park Visitors

## **Purpose of the project**

This project aims to understand how local and national sentiment towards nature and wildlife influence the decision-making process for governmental bodies in Norway. The Dovrefjell National Park holds significant cultural value to Norway, and the Musk Ox population found within the park have emerged as a local symbol. This purpose of the study will investigate how these perceptions have influenced the creation of management strategy for the Dovrefjell National Park.

This project will be used as part of the completion of a Master's thesis.

## **Who is responsible for the research project?**

Norges Teknisk-naturvitenskapelige universitet (NTNU) is the institution responsible for the project.

## **Why are you being asked to participate?**

To understand local perceptions and sentiments towards the national parks, stakeholders and users of the National Park have been selected. To understand the perspectives of individuals who recreate and use the national park, Park Visitors have been selected.

## **What does participation involve for you?**

Participation in the research project would include being involved in an 60min interview, that will be conducted either in person or digitally through a phone call. In both cases, the audio from interviews will be recorded. Most questions in the interview will be focused on the exploring how you (as a business owner) relate to the Dovrefjell National Park, and how you feel that the management of the park has impacted your business.

## **Participation is voluntary**

Participation in the project is voluntary. If you chose to participate, you can withdraw your consent at any time without giving a reason. All information about you will then be made anonymous. There will be no negative consequences for you if you chose not to participate or later decide to withdraw.

## **Your personal privacy – how we will store and use your personal data**

We will only use your personal data for the purpose(s) specified in this information letter. We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act). Responses will be stored in a protected offline storage system and will only be accessed by researchers directly involved in with the project.

The recorded interview will be transcribed into textual form, and any other personal information will be further removed from the transcribed text.

## **What will happen to your personal data at the end of the research project?**

The project is scheduled to end on June 30th, 2022. At the end of the project the audio recording will be erased, however the transcribed text will be archived for future research. The archived text will not have any identifiable content associated with it.

### **Your rights**

So long as you can be identified in the collected data, you have the right to:

- access the personal data that is being processed about you
- request that your personal data is deleted
- request that incorrect personal data about you is corrected/rectified
- receive a copy of your personal data (data portability), and
- send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding the processing of your personal data

### **What gives us the right to process your personal data?**

We will process your personal data based on your consent.

Based on an agreement with Norges Teknisk-naturvitenskapelige universitet, NSD – The Norwegian Centre for Research Data AS has assessed that the processing of personal data in this project is in accordance with data protection legislation.

### **Where can I find out more?**

If you have questions about the project, or want to exercise your rights, contact:

- Norges Teknisk-naturvitenskapelige universitet via Bret Collins ([bretc@stud.ntnu.no](mailto:bretc@stud.ntnu.no))
- Our Data Protection Officer: Thomas Helgesen ([thomas.helgesen@ntnu.no](mailto:thomas.helgesen@ntnu.no))
- NSD – The Norwegian Centre for Research Data AS, by email: ([personverntjenester@nsd.no](mailto:personverntjenester@nsd.no)) or by telephone: +47 55 58 21 17.

Yours sincerely,

Project Leader  
(Researcher/supervisor)

Student (if applicable)

# Appendix 4: Declaration of consent

## **Declaration of Consent**

I have received and understood information about the project “Influence of the Cultural and Symbolic Value of Nature on the Management of National Parks within Norway” and have been given the opportunity to ask questions. I give consent:

- ◆ to participate in the interview
- ◆ use of audio recordings during the interview
- ◆ to be contacted afterward for any follow-up questions or clarifications

I agree that my information will be processed until the project is completed, approximately June 30<sup>th</sup>, 2022.

-----  
(Signed by project participant, date)

# Appendix 5: Questionnaire Outline

## Are you interested in taking part in the research project: " Influence of the Cultural and Symbolic Value of Nature on the Management of National Parks within Norway"?

### **Purpose of the project**

This project aims to understand how local and national sentiment towards nature and wildlife influence the decision-making process for governmental bodies in Norway. The Dovrefjell National Park holds significant cultural value to Norway, and the Musk Ox population found within the park have emerged as a local symbol. This purpose of the study will investigate how these perceptions have influenced the creation of management strategy for the Dovrefjell National Park.

This project will be used as part of the completion of a Master's thesis.

### **Why are you being asked to participate?**

To understand local perceptions and sentiments towards the national parks, users of the National Park have been selected to understand the perspectives of groups who commercialize National Parks, Musk Ox Safari tourists, and National Park visitors have been selected.

1. Name:
2. Nationality:
3. Age:
4. Occupation:
5. What makes you enjoy spending time in Nature? (Select all that apply)
  - a. To be close to nature
  - b. To develop personal spiritual values
  - c. To get exercise
  - d. To experience new and different things?
  - e. To view scenic beauty
6. Rank these animals in terms of association with Dovrefjell National Park (Ranking)
  - a. Musk Ox
    - i. 1 – not strongly
    - ii. 10 – very strongly
  - b. Reindeer
    - i. 1 – not strongly
    - ii. 10 – very strongly
  - c. Wolverine
    - i. 1 – not strongly
    - ii. 10 – very strongly
  - d. Arctic Fox
    - i. 1 – not strongly
    - ii. 10 – very strongly
7. Why is the musk ox important to you?
8. Does the musk ox hold a symbolic/special value for you? (Y/N)
  - a. (If yes) What is this symbolic/special value?
9. Does the musk ox belong in Dovrefjell National Park? (Y/N)
10. Have you gone on an official Musk Ox Safari? (Y/N)
11. What were your motivations to go on the Musk Ox Safari (short answer)
12. How would you rate your knowledge of musk ox prior to the safari? (Scale 1-10)
13. Did you see musk ox on the Safari? (Y/N)

14. What were some of the highlights of the safari? (Short Answer)
15. After completing the Safari, did your feelings towards Dovrefjell National Park and the Musk Ox population change? (Y/N)
  - a. (If yes) how so
16. After the Safari finished, did you spend more time within the National Park? (Y/N)
  - a. (If yes) what did you do? (Short Answer)
17. Would you be open to having an interview to further discuss your experience on the safari, as well as your perceptions of the Dovrefjell Musk Ox? Interviews will be conducted in English via Zoom.
  
18. If yes: email address \_\_\_\_\_

#### Follow Up Interview Questions



# Appendix 6: Interview guide for Park Managers

## Themes

- Natural Resource Management
- Ecotourism
- Place Attachment

## Questions

- What extent are cultural significance of Dovrefjell National Park (DNP) factored into the decision-making process of management policy?
- Is more emphasis put onto the conservation of the ecosystem or with developing economic activities?
- When looking at key or icon species, where does the musk ox population rank compared with the wild reindeer herds?
  - o If importance is uneven, why is a certain species given more of importance or is more significant?
- Should the role of promoting economic growth be more prominent within the NPB?

# Appendix 7: Interview guide of Park Visitors

## Introduction:

- Brief overview of the project
- Distribution of information letter and declaration of consent
- Inform the participant of the voice recorder

## Demographics (Background)

- Nationality?
  - o If Norwegian, which part of Norway?

## Motivations

- If participant has been on safari: What were your motivations to go onto a musk ox safari?
- Why did you elect for this type of tour?
- What was your knowledge of the species before the safari?
- Which species of animals do you deem most important and or significant in the National Park?

## Relationships to land

- How often do you to visit DNP?
  - o What are your motivations for visiting the park?
- How do you enjoy spending time in nature? Why?
- Do you have a Connection to the National Park?

## Musk Ox Specific Questions

- What is your relationship with the local landscape and national park?
  - o Did this relationship change after the tour?
- Did you gain knowledge about the musk ox?
- When visiting and viewing the musk ox population, do you think there is additional value added by going on a tour?
  - o Do you think that the same experience can be achieved going without with guide?
- If you were to return to Dovrefjell National Park, would you want to go on another tour, or would you rather go on your own?
- From your own perspectives, or with other Norwegians you have interacted with, do you feel that there is a cultural connection to the Musk Ox?
- When you have visited the DNP, do you mainly hear Norwegian being spoken?
- Does hearing other foreign languages while viewing the musk ox, build a sense of pride towards the Musk Ox?
- What do you perceive to be one of the most significant threats to the Musk Ox within Dovre?

# Appendix 8: Interview guide for Tour Operators

## Introduction:

- Brief overview of the project
- Distribution of information letter and declaration of consent
- Inform the participant of the voice recorder

## Demographics

- Nationality?
  - o If Norwegian, which part of Norway?
- Age
- Sex
- Education level
  - o Field of study
- Years of work?
  - o Time spent directly guiding musk ox tours?
  - o What other types of guiding have you worked in?

## Musk Ox Specific

- What is the importance of the Musk Ox to your operation?
- What is the average group size for your trip?
- Are there differences in how your organization operates compared to other organizations?
- W
- What are typically motivations for customers?
  - o Are customers interested in hearing about the historical background of the species? Would they rather just observe in quiet?
- How does the historic nature of the national park affect the tours? Does this also influence the motivations and expectations of the tourists?
- Are the current management regulations providing additional restrictions which affect the way the tours operate?
  - o Are regulations more aligned at conservation or for promoting economic opportunity and growth?
  - o What changes could be made to improve both conservation and economic objectives.
- Are restrictions put in place have greater impacts on commercial operations as opposed to solo/unguided tours?
- When looking at key or icon species, where does the musk ox population rank compared with the wild reindeer herds?
  - o Are safari participants interested in seeing other animals? Is the focus primarily on seeing ox?
- Currently, many tours operate during the summer months, is rational due to consumer demand being higher in the summer or due to environmental regulations?

