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Bears and fears: Cultural capital, geography and attitudes towards large carnivores in Norway

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Recent studies and literature suggest that negative attitudes towards large carnivores may to a large extent be explained by ignorance and lack of certain aspects of cultural capital. Fear and resistance, it has been argued, can be overcome through spreading information and knowledge about carnivores and how to interact with them. This argument has, on the other hand, been interpreted as an example of inherent arrogance among urban elites, undermining the economic foundation and quality of life in rural areas. The article aims to analyse acceptance of bears in Norway among a representative sample of the population, to describe attitudes towards large carnivores, economic and cultural capital, the importance of physical and geographical closeness, and the extent to which and how these factors are interlinked. The analysis is based on two national quantitative surveys, carried out in 2005 and 2007. The findings show a clear, although small, increase in resistance to the existence of bears in Norway. The increase appears to be most marked among young people who have grown up in rural areas. The authors conclude that there is an increasing urban–rural divide on the issue of conservation policies and carnivore stock management.

Keywords: *acceptance, attitudes, bears, large carnivores*

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Introduction

The numbers of the four large carnivores, bear, wolf, lynx, and wolverine, are increasing in the Fenno-Scandinavian region. Although the Norwegian stocks of wolves and bears scientifically identified seem modest – 12 to 18 wolves (Wabakken et al. 2008) and c.130 bears (Bjervamoen et al. 2008) – the number of reported fatal attacks on farm livestock – especially sheep, but also reindeer and dogs – has increased significantly in recent years. A heated debate is taking place, and the scientifically based management system for natural resources has come under attack. Of the more spectacular expressions of the difficult management situation was a state-financed wolf hunt by helicopter in order to hunt down wolves outside the designated ‘core area’ for wolves in 2001 (NRK 2001), and a wolf head mounted on a stake on a bus shed within the core area for wolves in 2002 (NRK 2002). The organization ‘People’s Action for a New Carnivore Policy’ (Folkeaksjonen ny rovdyrpolitikk) receives government funding for a website for all types of carnivore-linked information, ranging from Government White Papers and scientific nature reports to the marketing of t-shirts with the message ‘Norwegian nature is wonderful – without wolves’ (Rovdyr 2009). The website may be an important basis for communication, creating a new, legitimate arena for information and expression of views. Despite the t-shirt message, a general reading of media, websites, scientific surveys, and literature suggests that most rural people do not deny the carnivores’ right to exist. The core issue is linked to size of stocks, distribution, and possibilities for culling – in other words, the management policies and knowledge that provide the grounds for making such decisions.

The dispersed settlement pattern, the small-scale farming structure based on animal husbandry and small stocks of sheep, and the need for utilizing grazing rights in outfields (forest, moorland and mountains – *utmark*) to compensate for limited arable land are important characteristics and possible explanatory factors for resistance to these carnivores (Kaczensky 1996). Further, Scandinavian recreational traditions, including berry picking and hunting, and the general right to roam, are perceived among some groups as threatened by the increase in large carnivores. Two recent killings of men by bears in Sweden have not lowered the temperature of the debate. The practical and psychological strain of spending more and more time looking for injured or dead sheep is resulting in farmers abandoning farming in already marginalized rural communities. On the other hand, lack of alternatives, the wish to remain in farming and in the area, as well as the fact that grazing rights and other rights in outfields are lost when not exercised, are reasons for sheep farmers remaining in business despite often very high lamb and sheep losses due to attacks by animals (*Aftenposten* 2009; *Nationen* 2009c).

The numbers of sheep increased in Norway in a period when carnivores were more or less extinct, from the end of World War II and up to the 1970s, and also partly as a response to restructuring and decline in other types of agriculture. From 1979 to 2001, the number of winter-fed sheep increased by more than 120,000, to a total of over 980,000 (Nersten et al. 2003). A relevant critique repeated by environmentalists (e.g. Næss 1979) is that the territory used for sheep farming has expanded, herding is limited in this high cost country, and modern breeds are less adapted than traditional breeds to conditions in the outfields, resulting in more losses.

A number of recent scientific studies point out that not only livestock owners hold negative attitudes to the large carnivores. Resistance to the recovery of wolves in southern Norway is found among rural working class hunters, who perceive carnivores as a threat to their lifestyle, as well as among owners of large forest properties (Skogen & Haaland 2001; Skogen & Krangle 2003). Large landowners as well as small-scale farmers adhering to the authorities' encouragement to commodify their outfields (*Nationen* 2009b) believe – and this is increasingly confirmed – that increased carnivore stocks will reduce their income from elk hunting.

The media have increasingly focused on the feelings of uneasiness and fear held by non-farming rural people, especially regarding bears and wolves. Their lifestyle in safe countryside surroundings is considered severely threatened following a number of reports of encounters with bears, for example at outdoor kindergartens and in farmyards, with family pets being killed, and bus transport for schoolchildren being introduced as a way to reduce fear (*Nationen* 2009a). Similar debates on *the wild* are taking place in other countries (Buller 2008).

An important contribution is by Mangerud et al. (2009), who studied Lierne in Nord-Trøndelag County, one of the major 'bear municipalities' in Norway. They found that in addition to the influence bears had on their livelihoods in farming, people reported having changed their use of the outfields; there were four times more changes in Lierne than in the reference district of Namdalseid, which is in the same region but with few reported observations of bears. Twice as many people in Lierne reported reduced life quality, health and well-being compared to Namdalseid.

It is, however, essential to keep in mind that a considerable number of people in carnivore areas are not directly affected by the recovery of large carnivores, and we have less knowledge about the attitudes among these rural citizens. Skogen & Krangle (2003) describe rural citizens who are not directly affected economically by large carnivores as a group with low engagement in the carnivore conflict. One explanation may be that they prefer not to speak out in favour of carnivores in an environment dominated by anti-carnivore attitudes. However, surveys have shown that people living in rural areas are generally more negative towards carnivores than people who live in cities (Knutsen et al. 1998; Bjerke et al. 2003; Ericson & Heberlein 2003). Although social scientists refer to the urban–rural dimension of this conflict, this has not been addressed explicitly in Norwegian research on the carnivore conflict. The urban–rural axis is more strongly expressed in the political debate, contributing to the social construction of the carnivore conflict (Blekesaune & Stråte 1997). Krangle & Skogen (2007) have argued that the conflict regarding wolves should be interpreted as a manifestation of a general protest against the marginalization of rural areas, both politically and economically.

What do we know so far about the operative mechanisms behind the formation of attitudes towards large carnivores? There is a general tendency for the educated middle class to take a positive view of large carnivores, and those who identify with academic knowledge and scientific discourse tend to be more positive towards wolves even if their direct interests are negatively affected (Skogen & Krangle 2003).

We should hence expect that education and cultural capital would have vital importance for the formation of attitudes towards large carnivores. There are several studies which suggest this. For instance, Norwegian studies have defined and operationalized cultural capital based on studies of the number of metres of books on people's bookshelves (Strandbu & Skogen 2000; Bjerke et al. 2003; Skogen & Thrane 2008). This is not as crude as it may sound: following Bourdieu's (1986; 1995) theory, cultural capital can be 'in the embodied state, i.e., in the form of long-lasting dispositions of the mind and the body; in the objectified state, in the form of cultural goods (pictures, books, dictionaries, instruments, machines, etc.)' (Bourdieu 1986, 243). This is mainly related to prestige and power linked to intellectual standards and positions mainly acquired through social background and education. In a country of high egalitarian ideals, where rurality and farming have been important for forming national identity, with free university education, and private schools being a rarity, Bourdieu's ideas have to some extent been perceived as not fitting well with the Norwegian situation. Nevertheless, concepts such as 'class travel' and 'cultural capital' have been actively debated and taken into use (e.g. Skarpenes 2007; Krangle 2007).

The two other fundamental forms of capital defined by Bourdieu (1986) are economic capital, understood as material property, and social capital, seen as 'networks of social connections and mutual obligations'. Social capital is important for understanding organization, social networks and mobilization. However, we will here limit the discussion to the concept of cultural capital because it has been used actively in Norwegian academic carnivore research.

Bjerke et al. (2003, 31) stress that a 'politically correct' and modern view of nature, including a positive perception of carnivores, is part of today's cultural capital, and these sets of values are linked to power, influence and hegemony in society. Thus, they argue, there is nothing normative in these studies' use of cultural capital. These studies also included lay estimates of carnivore stocks in relation to the prevailing scientific estimates and the findings have been linked to issues of rurality and cultural capital. The scientific estimates in some cases subsequently turned out to be too conservative (Sahlén et al. 2006).

Relevant research has until now mainly focused on wolves. However, the only direct encounters in Scandinavia that have led to bodily injury and even fatal outcomes in recent years are bear incidents. Yet much of the fear among people has been linked to the wolf, while the bear has had an intermediate or double status: it is both cute and cuddly, and being mainly a grass and blueberry eater, the bear's status as a dangerous carnivore has been more blurred than has been the case with the wolf. The Scandinavian brown bear is in general regarded as less aggressive and dangerous than its counterparts in other countries.

This article takes its starting point in recent studies and literature from Scandinavia suggesting that fear of and resistance to large carnivores may to a large extent be explained by cultural capital aspects. Environmental authorities, natural scientists and others have argued that through spreading information and knowledge about predators, fear and resistance against them can be overcome. We question

whether the 'material content' of these conflicts is under-communicated, and try to understand what may constitute the 'material content' of fear or resistance to large carnivores, especially bears. We ask the following questions: Does cultural capital prevent fear of large carnivores? Where do we find the defined cultural capital? How are attitudes to large carnivores interlinked or distributed in relation to cultural capital, position as a livestock holder or having carnivores in close vicinity?

Our aim is to analyse in more detail the interrelationship between attitudes towards bears, cultural capital as operationalized in recent studies, and the importance of physical or geographical closeness, in order to determine the extent and ways in which these factors are interlinked.

The study is based on a review of literature, including public documents, media coverage, web pages, and debate. Further, individual qualitative interviews were carried out with two distinct critics of the current carnivore policies to elucidate views on the 'no-side'. Primarily, we analyse the results of a national quantitative survey carried out twice, in 2005 and in 2007.

Fears of bears?

The recovery of brown bears in Norway

Around 1800, there were probably *c.*3000 bears in Norway, but a national bounty in 1846 led to a dramatic decline and the *ursus arctos* was virtually eliminated from the country by 1930. The one isolated population that remained outside the Russian borderland in the north of Norway was confirmed extinct in 1995 (Swenson et al. 1995).

Bears were protected by law in 1973, and the first expansion of bears started close to the Swedish border in the eastern part of Southern Norway. The recovery of brown bears in Norway is mainly an effect of the increase in bears in Sweden after the mid-1970s (Swenson et al. 1995), seen in the geographic pattern of sheep killed by bears in Norway after 1995 (Fig. 1).

In 2008, Norwegian sheep farmers were paid public compensation for 31,500 sheep assumed killed by protected predators, and the total compensation to sheep farmers was NOK 66.5 million (Rovviltportalen 2009) (NOK 6 = USD 1, NOK 8 = EUR 1). Reindeer owners were compensated for the loss of 15,400 animals (for the year 2006–2007), although repeatedly much higher claims have been made. Herded reindeer are mainly killed by other predators than bears (Fylkesmannen i Finnmark 2009). If we focus only on sheep killed by bears, the number of sheep compensated for has more than doubled, from 3060 in 2001 to 6600 in 2007 (Rovviltportalen 2009). The sheep that have been lost to predators are not randomly distributed among all Norwegian farmers. Only between 15% and 24% of the sheep that have been lost and compensated for have been documented by identified cadavers. The regional county governors based the remaining compensations on judgement, for which the Directorate for Nature Management and the Norwegian Agricultural Research Institute provide the scientific and economic basis. Here, we assume that the geographic

distribution of documented cadavers of sheep killed by bears shows where most bears are to be found in Norway. Fig. 1 shows the municipalities with documented sheep killings by bears between 1995 and 2005. These 95 municipalities constitute 22% of the 430 municipalities in Norway, but most are sparsely populated areas and comprise only 15% of the Norwegian population.

The present population estimates for bears in Norway are unconfirmed. In 2006 and 2007, two research projects based on DNA analysis of collected hair and droppings samples estimated the population of brown bears to be 69 in Central and Northern Norway (Eiken et al. 2007) and 60 in Southern Norway (Bjervamoen et al. 2008). In neighbouring Sweden there are *c.*3000 bears (Sahlén et al. 2006). Bears are included on the Norwegian Red List as strongly threatened (Kålås et al. 2006), but have recently been taken off the Swedish list. The number of breedings (litters) annually in Norway is estimated to be 3–6, while the defined aim is 15 (Miljøverndepartementet 2005). The repeated argument from carnivore sceptics is that actual numbers must be much higher due to the experienced loss of livestock as well as bear encounters. Within the present policy regime we may expect a considerable increase in the Norwegian population of bears in the years to come. This will also probably increase the geographical and social conflicts owing to more killed livestock and increased fear of bears.

One reason people fear bears is the impression that bears are dangerous. Although it is extremely rare for brown bears to kill or seriously injure humans, fatal encounters do occur. No persons have been killed by bears in Norway during the last 100 years, but one person, a jogger, was killed by bear in Finland in 1998, one person was killed in Sweden in 2004 (Sahlén et al. 2006), and in 2007 a fatal attack by a bear took place in Sweden close to the Norwegian border. Also in Sweden, two persons were injured by bears in 2007 (*Dagbladet* 2007) and a forest worker was injured in 2008 (*Folkebladet* 2008).

The above-mentioned episodes indicate that bears may represent a greater threat to humans and livestock than wolves. Yet one should bear in mind that there are more livestock losses due to disease, accidents, insects, and illegal slaughter (Jakobsen 2001), and there is widespread recognition that Norway's most dangerous species (excluding humans) are stinging wasps (Aculeata) and ticks (*Ixodes ricinus*) (Kristiansen 2003; *Nationen* 2008).

However, it is more than likely that the number of bears in Norway will increase, both due to the increase in the Swedish stock and because Norway has not yet attained the political aim of 15 annual litters, and we have to expect that conflicts connected to bears in Norway will increase in the years ahead.

Explaining the opposition against large carnivores

White Papers and other public documents concerning carnivore management are marked by an implicit presumption that if people were to receive correct information about the predators' natural behaviour they would change their attitudes towards large carnivores (St.meld. nr. 35 (1996–1997);

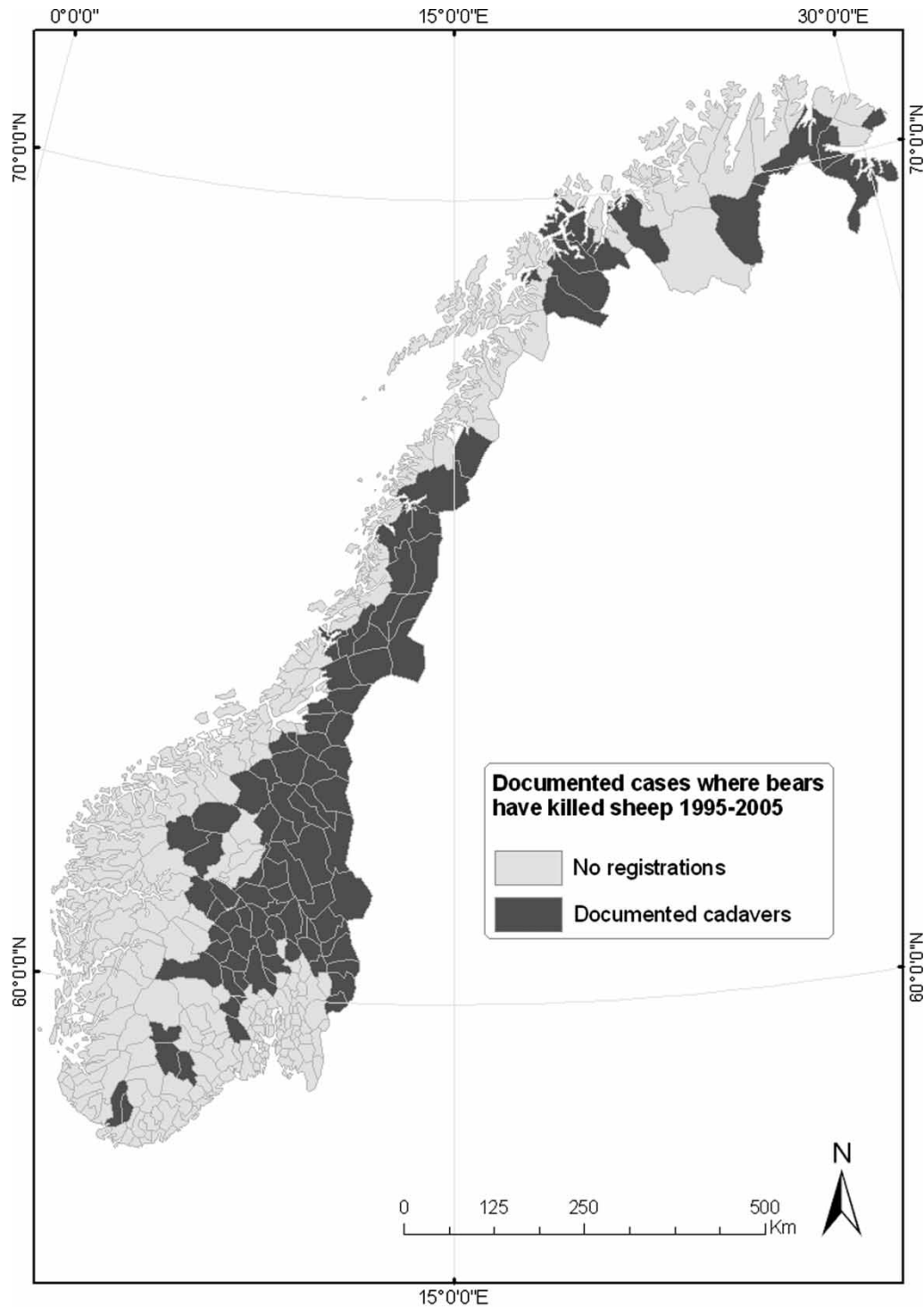


Fig. 1. Municipalities with documented cases where bears have killed sheep in the period 1995 to 2005 (source: Directorate of Nature Management: Rovviltportalen 2009)

St.meld. nr. 15 (2003–2004)). Environmental authorities, natural scientists and others have argued that fear and resistance related to predators can to a large extent be interpreted as an information problem that can be overcome through spreading information and knowledge about the predators (Brainerd & Bjerke 2003). Reports and brochures

from the Scandinavian Bear project (e.g. Sahlén et al. 2006) inform people that if they adhere to a certain set of rules of precaution, bears are not dangerous. Sahlén et al. (2006) state: 'most encounters with bears never happen' because bear flees when they become aware of humans. Therefore, as long as one does not approach female bears with cubs, is not

accompanied by unleashed dogs, and is not out hunting, bears are not dangerous. Since the first information was sent out, the list of encounters has become longer. Referring to the fatal attack on a Finnish jogger in 1998 and another recent attack on a female jogger in Finland, bloggers added dryly that 'as long as you don't run with soft, quiet shoes the bear is not dangerous'. A general summing up of the media debate (see Rovdyr 2009) may be concluded as follows: bears are not dangerous if your name is Lars Monsen (a wilderness adventurer who is famous in Norway) or you are a bear scientist, pointing to the fact that both venture out armed with guns or Daiquiri darts and both have outstanding experience in how to handle encounters with bears.

This is not to say that information concerning 'how to live with bears' (NINA et al. 2006) is not important or valuable. Yet the presumption that communicating the proper knowledge and information to concerned groups will solve the problem of carnivore resistance seems rather naïve and is hardly based on any accepted theory of learning. Social scientists have therefore tried to describe processes and mechanisms behind the formation of people's attitudes towards carnivores based on accepted theories of learning and socialization, and these analyses have mainly focussed on two important issues. The first approach has been how people's attitudes towards large carnivores are related to more fundamental views of nature and general values. Most of these contributions have treated attitudes as subjective factors that are constructed by each individual and based on their existing value structures. The other issue has been to describe how people's attitudes towards great carnivores might be explained as products of their material, social, and cultural contexts, and commonly explained as a manifestation of a rural-urban conflict.

A popular approach within value studies has been to show how attitudes towards different species of carnivores are rooted in more general value systems regarding environmental issues. Skogen & Thrane (2008) claim that it is sometimes difficult to distinguish between independent and dependent variables in some of these studies, and there is always a danger of verging on tautological arguments if attitudes are not situated within a broader social context. An illustrating example of a study where values among different groups of people are studied within different social contexts is the analysis carried out by Knutsen et al. (1998) of how people's scores on the Wildlife Attitude Value Scale (WAV), a general measure of people's values towards animals developed by Prudy and Decker (Decker & Prudy 1988; Prudy & Decker 1989; Decker & O'Pezio 1989), is positively correlated with their score on the Wildlife Acceptance Capacity (WAC), a measure of people's maximum acceptance of wildlife population. In the study they found that values ascribed to carnivores by sheep farmers were quite different than the values ascribed to carnivores by other people (Knutsen et al. 1998). The same study also showed that sheep farmers living within the Norwegian core areas of the wolverine had little confidence in research-based knowledge; this lack of confidence was evident even for farmers who had good insight into this knowledge.

In his further analysis of the survey data collected by Knutsen et al., Aasetre (1999) concluded that improved

communication between the opponents in the carnivore conflict demands that both expert knowledge and lay knowledge be taken seriously by the management system. Aasetre's suggestion is a management system that integrates the best parts of the co-management tradition into contemporary planning theories in what may be termed the communicative turn in planning theory (McCay & Acheson 1987; Jentoft 1989; Sagdahl 1992; Healey 1993). With such a co-management system, Aasetre claims that sheep farmers will accept the benefits of expert knowledge in carnivore management. A separate study shows that local people, and particularly sheep farmers, unsurprisingly want more influence in carnivore management (Bjørkhaug 1999).

To some extent, local participation has been implemented. The recent collection of carnivore evidence in the form of faecal matter and hair has partly been carried out by hunting teams and other local organizations, in part for practical reasons, but also as a way to integrate various groups into research and management. The designation of local carnivore hunter teams is another implementation. However, the permit application process for culling problematic individuals may be time consuming and the 'success rate' in culling is low. A new proposal from the Minister of Environment suggests replacing the current compensation based on documented losses with a more general compensation to livestock holders based on historical losses and numbers of carnivores in a region. This would reduce bureaucracy. The proposal was reportedly received positively by reindeer owners, but rejected by the Farmers' Union as well as the organization for a New Carnivore Policy (NRK 2009), who found the suggestion unfair; they also saw it as an acceptance of high losses in the future. The interpretation of Norwegian carnivore policies by the Peoples' Action for a New Carnivore Policy is that they will push farmers to give up in the long run. On the other hand, some farmers may react by holding out as a form of cultural resistance. Illegal culling, not necessarily by farmers, may be one expression of this resistance according to a representative of the organization (qualitative interview).

Although there is generally strong support for farming and its cultural landscape among the general population, expressed as wanting to keep both 'at the present level' when people are asked in annual polls (Norsk Monitor 2005; 2007), the position of rural areas and farmers nonetheless seems weakened. For example, newspapers' blogging debates tend to be dominated by urban accusations of farmers as subsidised carnivore haters (e.g. *VG* 2009). Elements in the critique are the fact that animals are let into the outfields with only limited herding, and claim that farmers in other countries carry out much more extensive herding and manage the balance between farming and carnivores.

A qualitative study in Sweden points out that wolf controversies are 'essentially not a conflict over wolves' (Sjölander-Lindqvist 2008, 71) but rather over different perspectives of what (Nordic) rural landscapes are: one perspective is the 'setting for social reproduction of cultural values and cultural survival'; the other understanding of the landscape is 'as a locus for species survival' in a conservation context (Sjölander-Lindqvist 2008, 90). In Scandinavia, particularly in Norway, this applies to the multiple uses of

outfields. Rural groups perceive and use outfields not as wilderness but as an arena for harvesting – grazing, hunting, fishing, berry picking, hiking, etc. The rich cultural heritage and associated semi-natural biodiversity resulting from low intensive farming practices in the outfields are pointed out as at risk due to reduced activity (Olsson et al. 2004; Bryn 2008), and increasingly this is seen in relation to the increase in carnivore numbers. The argument made by ecophilosopher and former sheep farmer Sigmund Kvaløy Setreng (personal communication, 2008) is that Norway has a greater moral responsibility to maintain the production capacity of the relatively unspoilt, high quality farmland with intact topsoil characteristic of its many small farms than towards a national carnivore stock management, especially in the context of global climate change and an expected food crisis. Setreng worked closely with the philosopher Arne Næss for a period. However, he came to a different conclusion, as Næss (1979) pointed out that no being has priority, but stressed the principle that ‘maximal realization of potentials implies maximal diversity’ (p. 233). He also pointed out the acceptance among people generally in rural areas that carnivores have a right to live. Næss & Mysterud (1987, 29) suggested that extreme aggression by some sheep farmers against carnivores (wolves in this case) could be explained by feelings of guilt because they ‘are physically and economically unable to protect [the sheep] from repeated carnivore attacks’. They called for ‘long range global norms directing conservation strategies’ (Næss & Mysterud 1987, 27). They largely follow Setreng’s argument that small-scale Norwegian farms represent valuable lifestyles well worth taking care of, but conclude that Norway’s international obligations and the risk of losing international legitimacy as an advocate of environmental issues, and the fact that it is a rich nation, nonetheless favour strong wolf policies. Whether they would have reached the same conclusions today regarding bears, which have increased substantially in terms of numbers and sheep killings, is an open question.

A qualitative study in two Norwegian communities by Figari & Skogen (2008) points out the consensus base that actually exists in carnivore conflicts. They claim that conflicts are mainly related to ‘whether the animals belong in areas where they are now found’ (Figari & Skogen 2008, 4). They point out that the large number of attitude studies carried out have inherent weaknesses in overemphasizing the conflict dimensions, while carnivore conflicts should be seen as expressions of social representations as well as conflict between rural and urban cultures.

Blekesaune & Stræte (1997) have identified two basic lines of conflict within the Norwegian debate about large carnivores. One is between landowners’ private economic interests (livestock losses, loss of income from hunting as hunters flee carnivore areas due to less game and loss of hunting dogs) and government administrators who are responsible for national nature management. The other is between the local actors’ wish to influence the management of carnivores and government administrators’ management, based on biological criteria. While the first line of conflict appears as a use-protection conflict, which to some extent can be de-emphasized through legal systems providing

economic compensation, the second line of conflict involves local actors’ objective to influence management through a national, democratically based management system. Despite the psychological stress and traumas linked to the first objective, finding a solution which satisfies all parties for the latter objective is probably much more difficult.

The two lines of conflict correspond with Emmelin & Kleven’s (1999) examination of attitudes, thought styles and world views in the Norwegian environmental administration; they found that ‘the Norwegian core environmental administration holds a rather extreme position on biodiversity’ (Emmelin & Kleven 1999, 51). This may relate to Sjölander-Lindquist’s (2008) argument that rural landscapes are seen ‘as a locus for species survival’ or in relation to a ‘wilding’ narrative held for Nordic landscapes (Soliva et al. 2008).

Krange & Skogen (2007) indicate that conflicts regarding wolves may have more to do with restructuring processes, depopulation and marginalization of rural communities, losing power and influence, versus conservation authorities and an urban elite. The conflict is about academic power over lay knowledge, rather than about loss of livestock and economic damages.

Krange & Skogen (2007) emphasize the concept *cultural resistance* in their interpretation of the carnivore conflict; people may refuse to conform to public advice based on expert knowledge, since they regard expert knowledge as a threat to their traditional lifestyle and autonomy. Correspondingly, the notion of local knowledge and observations tends to be ridiculed by scientists and management. The representative of the People’s Action for a New Carnivore Policy pointed out the suspicion in major bear areas that certain scientists are holding back information that justifies local, lay estimates of bear stocks. The idea of conspiracy is nothing unusual in conservation conflicts (Frisvoll & Ronningen 2009), yet revised scientific updates and the increasing losses being reported give such accusations some credence.

Skogen & Thrane (2008) emphasize the work of Manfredi et al. (2003) as a good example of research that develops and constructs scales to measure theoretical concepts of wildlife value orientations deduced from Inglehart’s (2003) theory of a general transformation from materialist to post-materialist values in advanced countries. They note that this point of view is more closely related to basic value sets than to more random attitudes. Another important basis in Inglehart’s theories, which has not been stressed in research on attitudes towards large carnivores, is that these basic value sets are mainly formed between the age of 15 and 20 years, and that they usually change little after that (Inglehart 1977). From this, we should expect that a change in wildlife value orientations is mainly a generational phenomenon which is relatively stable over time within each cohort. Even if more sophisticated theories relate age cohorts to social structures over their total life span (Elder 1994), we assume that childhood environment has significant influence on people’s attitudes towards large carnivores. If this assumption is correct, we may also expect that (1) the social and material context where people grow up is probably more important for the formation of their attitudes towards large carnivores

than the context in which they live now, and (2) the rural–urban conflict is probably somewhat underestimated because the context during adolescence has usually not been included in explanations of people’s attitudes towards large carnivores.

Our hypothesis is that the focus on the lack of cultural capital among the sceptics towards Norwegian wildlife conservation and large carnivores blurs the cultural, social, and economic conflict between centre and periphery in Norwegian society. Eckstein (1966) and Rokkan (1970) have described Norwegian rural societies as communities with strong feelings of solidarity and equality, which in the 19th century led to a fundamental political conflict between farmers in rural areas and public officials in urban areas. Although Østerud (1986) has claimed that this conflict is overstated, previous literature on conflicts regarding carnivores gives reason to believe that the rural–urban conflict ought to be handled as an empirical question.

Most quantitative studies of attitudes towards large carnivores in Norway have focused on wolves (Bjerke et al. 2003; Skogen & Thrane 2008), but we assume that attitudes towards wolves have relevance for studies of attitudes towards bears. A Norwegian national survey, undertaken by Bjerke et al. (2003), shows high correlations between peoples’ attitudes towards different species of large carnivores; this should imply that we can expect factors that have been identified as significant in explanations for attitudes towards wolves to be also significant in explanations of attitudes towards bears.

We fully share Figari & Skogen’s (2008) argument that the concepts of ‘attitudes’ and ‘acceptance’ are somewhat unsatisfactory because people’s relationships to such animals are multifaceted, including respect for and admiration of these animals’ many impressive qualities. Yet we believe that existing statistics and surveys on attitudes have not been fully utilized in order to analyse the carnivore issue in Norwegian contemporary society, and some important aspects related to the social context where attitudes are formed have been overlooked. In the remaining part of this section we will give a brief review of the most relevant previous Norwegian empirical findings regarding demographic, economic, and social variables’ influence on people’s attitudes towards carnivores.

Gender effects

In the graphical presentation of their structural equation model measuring interests and values concerning wolves in Norway, Skogen & Thrane (2008) included effects of age and gender, but for some reason chose not to present the coefficients from age and gender. Even if the general pattern is not clear, studies have documented that women are more engaged in environmental questions than men (Grendstad 1999); data from Statistics Norway (SSB 2007, 157 (Table 15.11)) show that men are more active in environmental organizations than women. However, many Norwegian studies show that women are more negative towards large carnivores than men (Skogen 1996; Bjerke et al. 1998; 2000; 2003;

Strandbu & Skogen 2000). Knutsen et al. (1998) have found that women are more negative towards bears and wolverines, but found no gender difference concerning lynxes.

Age effects

Many studies have documented that young people’s attitudes towards large carnivores are more positive than elderly people’s attitudes. In their survey among citizens within the core area for bears in Norway (shown in Fig. 1), Knutsen et al. (1998) identified a corresponding age pattern in the responses to a question concerning the desired bear population size. This age pattern can be explained as a cohort effect, in that older people have lived in a society with small problems connected to large carnivores since the carnivores were almost extinct between 1930 and 1973 (Swenson et al. 1995). If we accept Inglehart’s (1977) assumption that our basic value sets are mainly formed when we are between 15 and 20 years of age, we should also expect differences in acceptance towards bears to be relatively stable over time within each cohort, and that changes in acceptance mainly occur among younger people. However, high acceptance among young people could also be explained as a life-cycle effect, because many young people have not yet been integrated in the production economy; thus, they can readily internalize values of ecology and positive attitudes towards large carnivores (Skogen 1999). Unfortunately, it is not possible to distinguish clearly between cohort effects and life-cycle effects with our cross-sectional data, but in the analysis presented here we aim to estimate the age pattern in order to contrast these two explanations.

Rural–urban dimension versus living inside or outside carnivore areas

A number of studies have shown that rural people are more negative towards large carnivores than urban people (Bjerke et al. 2003; Ericson & Heberlein 2003), but none have actually tried to analyse whether this difference is a result of geographical proximity to the carnivores, or whether it exemplifies a more fundamental conflict between people living in rural areas and people living in urban areas. A Norwegian study of environmental attitudes held by youths showed that the difference between urban and rural areas could only be identified on questions connected to large carnivores (Skogen 1996). A survey among residents in the neighbourhood of the Norwegian core area for bears showed that people with an urban childhood were more positive towards bears than people whose childhood was in a rural area (Knutsen et al. 1998). This finding implies that geography matters, and that *where* childhood and upbringing take place has been overlooked in the Norwegian academic debate concerning attitudes to carnivores. Therefore, we should take a closer look at the effects of childhood area in order to grasp the subjective formation of this rural–urban conflict.

Social class, capital, and education

There is a marked tendency that the highly educated middle class generally has a positive view of carnivores (Skogen & Krangle 2003). It should be noted that the environmental movement generally derives its fundamental support from those groups within the middle class that are highly educated, mainly employed in 'non-productive' sectors, generally meaning not within primary or secondary industries, and have incomes in the medium range (Cotgrove & Duff 1980; Kriesi 1989; Skogen 1999). The major problem in measuring the effects from each of these variables in one model is related to the fact that education, class, and income are highly correlated. This multicollinearity is usually not a statistical problem, but it may easily lead to misinterpretations and thus wrong conclusions if we omit important variables which identify this middle class group. For instance, people with higher education are more positive towards large carnivores than people with lower levels of education (Bjerke et al. 1998; 2000). This relation is not necessarily explained as an effect of education per se; rather, it may be explained by the fact that the same cultural conditions that lead to higher education also dispose for particular attitudes towards environmental questions (Bjerke et al. 2003). A number of studies emphasize that the professions most sheltered from the market economy, such as the middle class in the public sector, are those most engaged in environmental issues, and constitute the base for the environmental movement (Morrison & Dunlap 1986; Skogen 1996; Bjerke et al. 2003).

Even though there has been an assumption that those with higher education are more likely to be exposed to and understand information about the complexities of environmental degradation, Grendstad (1999) could not identify significant correlations between educational level and values in the New Environmental Paradigm (NEP), a general scale measuring environmental values developed by Dunlap and colleagues (Dunlap & Van Liere 1984; Dunlap et al. 2000).

In a study of environmentalism among Norwegian youths, Strandbu & Skogen (2000) found that cultural capital is more important than class background for the development of young people's environmental orientation. They maintain that class analyses that do not take cultural diversity into consideration are less useful for understanding environmental attitudes and environmental action.

In order to distinguish between all of the above-mentioned aspects of middle-class culture, we included years of education, cultural background, family income, and self-reported class dummies in our study.

Other factors that could influence attitudes to bears

Hunters in wolf areas have been identified as having predominately negative attitudes towards wolves (Bjerke et al. 2000; Williams et al. 2002; Rodriguez et al. 2003; Skogen & Krangle 2003). Researchers have even described different interests in hunting as the main reason behind different attitudes towards carnivores between social classes. It is also well documented that farmers, especially sheep

farmers and forest owners, are negative towards the increase of carnivores (Knutsen et al. 1998; Skogen & Krangle 2003).

Most of the presented studies, although mainly focused on conflicts related to wolves, ought to be relevant for analyses of attitudes towards bears. Our review showed that individual characteristics such as gender, age, education, income, social class, and social background appear to influence attitudes towards carnivores. In addition, we found that the place in which a person has grown up and currently lives influences their attitudes both because some areas have more carnivores and because the carnivore discourse can reflect a more general rural-urban conflict. We have also seen that farmers and hunters generally have negative attitudes towards carnivores.

Survey data and methods

The aim of this quantitative study was to analyse, at a more detailed level than has previously been carried out, attitudes towards bears, cultural capital, the importance of physical or geographical closeness, and the extent to which and how these factors are interlinked.

Data were used from the surveys Norsk Monitor 2005 and Norsk Monitor 2007, carried out by Synovate Norway. These surveys are the latest two of a comprehensive biennial market-research survey which has been carried out since 1985, and has been widely used by social researchers (Hellevik 2008). The data were obtained in a two-stage process. First, a random sample of people were contacted by telephone and asked to participate in a comprehensive survey of values. Then, those who agreed to participate received a self-completion questionnaire by post. The total samples were 3849 in 2005 and 3909 in 2007. Both samples were weighted by population weights developed by Synovate Norway, and are representative of the Norwegian population aged 15 years and above (Hellevik 2008). In order to measure changes in attitudes, the results are based on samples from the two surveys.

The dependent variable in our analysis is based on the question 'What is your opinion about the presence of bears in Norway?' The original alternatives were 1 'find it completely unacceptable', 2 'find it rather unacceptable', 3 'neutral', 4 'find it rather acceptable', and 5 'find it completely acceptable'.

The survey used similar questions for bears, wolverines, lynxes, and wolves, and the reliability test showed a Cronbach's Alpha of 0.97 between the four items. (Cronbach's Alpha is commonly used standardized measure between 0 and 1 that shows how well a set of variables measures a single one-dimensional latent construct.) This indicates very high internal consistency in the attitudes towards different large carnivores, which implies that studies of attitudes towards wolves ought to be relevant for the analysis of attitudes towards bears. In the analysis, we coded 8 respondents with missing values on this question as category 3. The responses to the question are presented in Table 1.

Table 1 shows that the majority of participants were positive or neutral to having bears in Norwegian nature. The share of those who responded in the two negative categories

Table 1. Responses to the question 'What is your opinion about the presence of bears in Norway?', by year (%)

	2005	2007
1 Find it completely unacceptable	6	9
2 Find it rather unacceptable	12	13
3 Neutral	29	29
4 Find it rather acceptable	19	19
5 Find it completely acceptable	34	31
Total	100	101
(n =)	(3520)	(3636)

Pearson's $r = -0.047$, $p < 0.001$

increased from 18% to 22% between 2005 and 2007. The negative value on Pearson's r indicates a slow but statistically significant increase towards negative attitudes between 2005 and 2007.

Demographic variables

The *gender* variable was coded as a dummy variable where men were coded 1 and women are coded 0. *Age* was measured with piece-wise constant slopes (splines) for age below 25, age 25 to 50, and age above 50, with unique slopes for each age range (March & Cormier 2001). Age coefficients indicate a 10-year increase, which makes the age coefficients larger and more visible in the tables, using decimals for individual years.

The *income* variable classified family income into nine ranked income groups. *Social class* was measured by seven dummies based on the question 'What kind of work do you do?' The first class dummy consisted of unskilled workers and operators, named 'unskilled workers'. The second class dummy consisted of top executives and general managers, named 'top executives'. The third dummy consisted of employees with other executive positions within the service sector, and was named 'service class with other executive positions'. The other employees in service sectors were identified in the fourth dummy called 'lower service class'. The fifth dummy consisted of all 'self-employed persons'. The sixth consisted of pupils, students and apprentices, and was named 'students'. The last dummy was named 'other outside the labour market', and included those who had answered that they were either unemployed, retired, in receipt of social security, married without work, and the answer category 'other'. All of the dummies were measured according to the group skilled workers, which constituted the reference category to which all classes were compared. *Education* was measured with two variables: The general question was 'What is your highest general education?', and the alternatives were 'Elementary school', 'Middle school', 'High school', and 'College/University'. Those in the latter group were asked whether their university study resulted in a university degree. We coded this information into a new variable measuring the number of years in full-time education which the level of education normally takes to complete, with five steps from 7 years up to 16 years. The variable named *cultural background* was based on the question 'I grew up in a home with many books, music, art, and other cultural

interests'. Here, the respondents could answer 'completely disagree' (1), 'partly disagree' (2), 'impossible to answer' (3), 'partly agree' (4), or 'completely agree' (5). In our view, this question gives a more valid and comprehensive measurement of the concept cultural capital than questions linked to bookshelf metres, used in some studies of attitudes towards carnivores.

In addition to the individual characteristics, we included some variables on the municipality level in order to measure the degree to which the actor's economic, social and cultural environment might influence his or her attitudes towards bears. Statistics Norway has classified the 430 municipalities in Norwegian into a seven-step index ranging from 1, which includes the most rural municipalities, up to 7 which includes the most urban municipalities (SSB 1994). This *centrality* index is a measure of a municipality's geographical position in relation to a centre where higher orders of functions (central functions such as bank, post office) are found. In addition to this classification of municipalities where the respondents currently lived, we also included a corresponding seven-step index of the centrality of the municipality where the respondents grew up. This variable is named *centrality while growing up*. Respondents who grew up outside of Norway were coded 0 on this variable, and these respondents were identified with value 1 on another dummy named *grew up abroad* as these people would not have affected the coefficient *centrality while growing up*.

We also included a dummy with value 1 if the respondent lived within one of the 95 municipalities with one or more *sheep registered as being killed by bears* during the period 1995 to 2005 (Fig. 1). The variable *year 2007* identified the changes between the different surveys, and was coded with the value 0 for the first survey (in 2005), and 1 for the second survey (in 2007). The descriptive statistics of all variables are presented in the Appendix.

Results

Table 2 shows estimates from an ordinary least square measuring the effects which the independent variables have on acceptance of bears in Norway. The model is estimated by Stata 10, with sampling weights generated by Synovate Norway. In Table 2, we present the unstandardized beta coefficients (B), and their corresponding t-values and p-values, and the coefficient is marked with one asterisk (*) if it is statistically significant at the 5% level and with two asterisks if it is statistically significant at the 1% level.

The negative coefficient of the gender variable shows that women are more sceptical towards bears than men. The three age slopes indicate that elderly people are more negative towards bears than younger people. The negative coefficient is strongest among the eldest respondents, while there is no significant difference between age groups among people younger than 25 years. Family income has no significant influence on attitudes towards bears. Only one of the class dummies has a significantly different opinion from the skilled workers. The effect of education is positively related to attitudes towards bears, and shows that respondents with a higher level of education are much more positive towards

Table 2. Opinion about bears in Norway by individual and collective characteristics of the respondents: ordinary regression model with data from surveys in 2005 and 2007

	B	t-value	p-value
Gender (women = 1/men = 0)	-0.220**	-6.43	0.000
Age slopes indicate a 10-year increase			
Age slope <25	0.099	0.71	0.480
Age slope 25-50	-0.089**	-2.93	0.003
Age slope 50+	-0.346**	-14.81	0.000
Centrality (index from rural = 1 to urban = 7)	0.034**	3.45	0.001
Centrality while growing up (rural = 1 to urban = 7 + abroad = 0)	0.052**	5.68	0.000
Grew up abroad (abroad = 1/Norway = 0)	0.642**	6.71	0.000
Family income (in 9 ranked income groups)	0.012	0.85	0.397
Social class (dummies with skilled workers reference)			
Unskilled workers	0.030	0.37	0.708
Top executives	-0.043	-0.49	0.627
Service class with other executive positions	0.049	0.77	0.444
Service class other	-0.014	-0.26	0.796
Self-employed	-0.009	-0.13	0.896
Students	0.175	1.86	0.063
Other	-0.034	-0.64	0.522
Cultural background (low = 1-high = 5)	0.078**	7.12	0.000
Education (number of years)	0.053**	8.26	0.000
Living on farm (yes = 1/no = 0)	-0.531**	-8.51	0.000
Hunter (yes = 1/no = 0)	-0.035	-0.72	0.471
Affected (sheep killed 1995-2005 = 1/other = 0)	-0.140**	-3.02	0.003
Year 2007 (2007 = 1/2005 = 0)	-0.073*	-2.31	0.021
Constant	2.450**	7.78	0.000
(N =)	7156		
R ²	0.221		

*significant on 5% level, **significant on 1% level

bears than respondents with lower levels of education. Another substantial effect is from the variable measuring the respondents' cultural background. The positive effects from both education and cultural background imply a strong and positive relation between cultural capital and acceptance of bears. There is also a very strong, but negative, effect from the variable which identifies the respondents living on farms, showing that these respondents are much more negative than other respondents towards bears. On the other hand, there are no differences in acceptance of bears between hunters and other respondents. There is a negative relation between our indicator of rural municipality and bear acceptance. The corresponding characteristics of the areas where the respondents grew up had even more influence on their attitudes towards bears, and show that respondents with an urban childhood were much more positive towards bears than those with a rural childhood. The variable which identifies municipalities where bears have killed sheep between 1995 and 2005 shows that respondents who lived in one of these municipalities were more negative towards bears than those who lived in municipalities without such problems. The last variable in Table 2 shows that there was increased scepticism towards bears between 2005 and 2007.

In Fig. 2, we have predicted values on bear acceptance based on variables in Table 2, but expanded the model by including interaction terms between the age slopes, centrality while growing up, and year. Fig. 2 shows that the changes in acceptance between 2005 and 2007 had different effects among different age groups, and different effects among people who had grown up in rural and urban areas. The Figure confirms our expectations that changes are

most evident among younger people. We see that the difference in acceptance between youths in rural and urban areas increased considerably between 2005 and 2007, mainly because younger rural people had become much more negative towards bears. Even if there also was a decreased acceptance among the youngest who had grown up in urban areas, this decrease is much more evident among people who had grown up in rural areas. This could indicate that the prospective conflict concerning carnivore management will increase rather than decrease in the future.

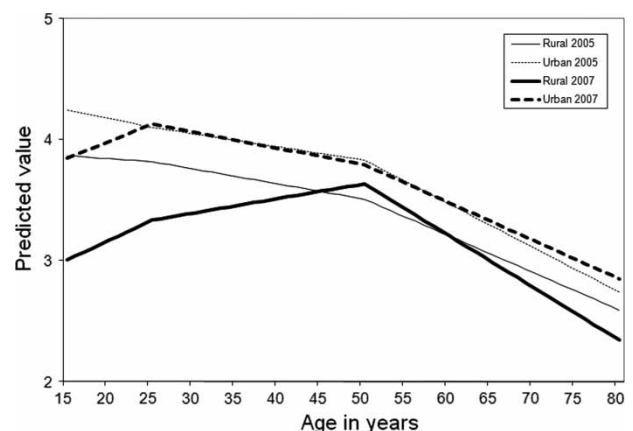


Fig. 2. Predicted opinion about bears in Norway in 2005 and 2007 by age among informants who grew up in rural and urban areas, when all other variables are set to their mean value

Discussion

In this article we have questioned the prevailing idea among many natural scientists, nature managers, government administrators, and environmentalists that rural resistance to large carnivores can be eliminated through spreading more information and knowledge about the carnivores. We have further questioned the implications and fruitfulness of using 'cultural capital' in studies of carnivore attitudes, in our context specifically bears.

In summary, our quantitative data analysis reveals that women are more negative to bears than men, and older people are more negative than younger people. Even if it is impossible to distinguish between cohort effects (generations) and life-cycle effect (aging) in a cross-sectional study, our analysis of the stability in attitudes among adults indicates that the differences between ages is a result of a generational effect. Our analysis shows that young people to a great extent develop their attitudes towards bears during adolescence, and these attitudes remain relatively stable during their adult life stages.

The centrality indexes show that people are more positive to bears the more urban the area they currently live in, and particularly that those who have grown up in urban areas are much more positive to bears than those who have grown up in rural areas. Respondents who had grown up abroad were even more positive towards bears than those who had grown up in urban Norway. The model also shows that people living within the area where sheep have been killed by bears during the last decade were much more negative to bears even when we controlled for the general effects of the rural characteristics of these areas.

Education level and self-reported cultural background were shown to have had positive effects on attitudes towards bears. This finding is in accordance with the expectations, based on previous studies, that amount of cultural capital has a vital importance on people's attitudes to bears.

We could not identify any significant differences in attitudes towards bears between the social classes, and family income had no influence on attitudes to bears. Neither could we find any difference in attitudes towards bears between hunters and those who do not hunt. In a model-based design, this latter result could either occur because the independent variable has no effect on the expected value on the dependent variable, or it could be a result of multicollinearity between the explanatory variables in the model so that the common effect within two independent variables is explained by the other of these independent variables. In this case, both independent variables should obtain significant effects in bivariate models with only one independent and one dependent variable.

Our analysis with bivariate models (not discussed here) indicates that the difference in attitudes towards bears between hunters and non-hunters is not even statistically significant in a simple bivariate model. This is somewhat unexpected on the basis of Krange & Skogen's (2007) qualitative study describing hunters' values within carnivore districts, but it shows that hunters in a national sample are a much more heterogeneous group concerning their attitudes to bears. Bivariate analyses of the class dummies show that

top executives and students have more positive attitudes than skilled workers towards bears; on the other hand, the group named 'others', because they have no regular connection to the labour market, are more negative to bears than skilled workers. The latter effect has probably disappeared in the full model as an age effect because most within this group were retired people. The age variables also explain the bivariate effect from students. The bivariate effect from top executives is rather influenced by education.

From the survey data from both 2005 and 2007 we confirm that there is a certain, but small, increase in resistance to the existence of bears in Norway, probably following the fatal attacks on people by bears in 2004 and 2007 in neighbouring Sweden, but also following an increase in the number of reported killed livestock as well as reported encounters with bears. However, the increase in negative attitudes seems mainly to be strengthened among younger people, and especially among younger people who have grown up in rural areas. In other words, geography matters, and solidarity with co-inhabitants is probably an important part of attitudes.

However, the debate has been dominated by: 1) a presentation of groups and individuals expressing scepticism towards carnivores as 'lacking cultural capital', with cultural capital operationalized as bookshelf metres and recognition of scientific carnivore knowledge versus lay knowledge; 2) the status of lay knowledge versus scientific knowledge in adaptive management, meaning how many, how often and under what circumstances 'problematic individuals' may be culled. We argue that the way many natural scientists, nature managers, government administrators, and environmentalists interpret the carnivore conflict needs to be changed. Rather than regarding the conflict primarily as something that can be solved through information and knowledge about the carnivores' natural behaviour, the conflict should be seen as resistance among rural people that is based in more fundamental mistrust of what is seen as a widespread arrogance among many representatives of their opponents in the carnivore discourse. These rural communities want an acceptance of their problems as 'real', and not 'social constructions'. Most of all, we need to acknowledge that the carnivore issue is important because it points to some fundamental issues in contemporary Norway that have a material character not only in terms of economic losses, but also loss of quality of life and what is perceived as freedom in rural areas.

One may question how relevant it is to measure cultural capital when carnivore numbers are increasing and more people necessarily will be affected by them. The connections made in previous studies may be said to rely on the following logic: living in a rural area, one is likely to have a low level of cultural capital and education, and therefore fears or wants to reduce the numbers of carnivores. Given more information and education, it is supposed that acceptance of carnivores will increase, and at the same time one is more likely to leave the rural area and find a new occupation and new perspectives and values in an urban area.

One conclusion may be that policies need to cut the knot by concluding that certain areas are not suited for (sheep) farming, and that measures for a transfer to other activities

are needed. However, the political courage for doing so on a sufficient scale is absent (it has so far only been tried out for some small areas), partly because this may involve large areas, many of which are lacking good alternatives. An almost 9% reduction in sheep numbers in the period 2004–2009 is a strong indicator of the development trends (Norwegian Agricultural Authority 2010). The consequence of a cessation of livestock holding is dramatic landscape change and loss of semi-natural biodiversity. Norway is suffering from a ‘wild biodiversity’ versus ‘cultural landscape biodiversity’ discourse tangled in regional and rural policies. Despite the national obligation to maintain independent, sustainable carnivore stocks, we believe future management may need to a greater extent to be seen as joint management between regions and countries. A further conclusion is that culling policies need a new political, management and scientific focus in which rural communities are more involved and which include rural development perspectives to a much stronger degree if Norway is to fulfil its aims in carnivore management. Finally, we need a continuous debate on what is worthwhile protecting and how management systems may include the human, rural factor – and to include both the local and global dimensions of these issues.

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Appendix

Descriptive statistics for the variables to be analysed; N, minimum, maximum, means and standard deviation for continuous variables, and per cent with value 1 for dummy variables

	N	Min.	Max.	Mean	Std.
Dependent variable					
Opinion about bears in Norway	7156	1	5	3.6	1.3
Independent continuous variables:					
Age in number of years	7156	15	93	49.8	15.7
Centrality (index from rural = 1 to urban = 7)	7156	1	7	5.6	2.1
Centrality while growing up (rural = 1 to urban = 7 + abroad = 0)	7156	0	7	4.9	2.4
Family income (in nine ranked income groups)	7156	1	9	3.6	1.6
Cultural background (low = 1 – high = 5)	7156	1	5	2.9	1.5
Education in years	7156	7	18	14.4	3.2
Independent dummy variables:					
	N	Min.	Max.	% with value 1	
Gender (women = 1/men = 0)	7156	0	1	54%	
Grew up abroad (abroad = 1/Norway = 0)	7156	0	1	3%	
Social class (dummies with skilled workers reference)					
Unskilled workers	7156	0	1	7%	
Top executives	7156	0	1	5%	
Service class with other executive positions	7156	0	1	11%	
Service class other	7156	0	1	12%	
Self-employed	7156	0	1	6%	
Students	7156	0	1	5%	
Other	7156	0	1	38%	
Living on farm (yes = 1/no = 0)	7156	0	1	9%	
Hunter (yes = 1/no = 0)	7156	0	1	16%	
Affected (sheep killed 1995–2005 = 1/other = 0)	7156	0	1	16%	
Year 2007 (2007 = 1/2005 = 0)	7156	0	1	51%	
Valid N (listwise)	7156				