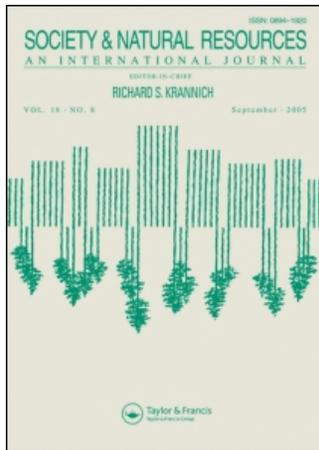


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Wolves in Context: Using Survey Data to Situate Attitudes Within a Wider Cultural Framework

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Studies of public attitudes toward wolves tend to be descriptive in nature, and few sophisticated analyses of complex attitude patterns have been conducted. Drawing on findings from qualitative studies, the present study analyzed nationally representative survey data from Norway in order to probe the relationships between attitudes toward wolves and such factors as education, urban/rural place of residence, cultural capital, and various value orientations: environmental orientation, general political values, and trust in formal or informal information sources. Structural equation modeling confirmed that attitudes are embedded in more general cultural patterns. Although the cultural level is influenced by structural factors, effects of the background variables were reduced or disappeared in a model that included value orientations. This finding demonstrates that in order to access the level of meaning by means of survey methods, carefully constructed instruments and causal models must be employed.

Keywords attitudes, culture, qualitative methods, quantitative methods, structural equation modeling, wolves

Recent qualitative studies have approached conflicts over large carnivores not only as conflicts between people and animals, but also as social conflicts (cf. Wilson 1997; Skogen 2001; Mauz 2005). Thus, the controversies have been interpreted in a context of contemporary social change and as instances of more general struggles over how to use and understand our natural surroundings. There has been a particular emphasis on the cultural level in order to understand why these controversies have caused such broad mobilization of interest groups. The studies have produced new insights, but qualitative research has some well-known limitations. It is indispensable for exploring meaning and interpretation, but the typically limited number of informants and the restricted spatial scope create problems with generalizability.

In principle, survey studies could overcome these limitations and test the validity of findings from the qualitative work in large representative samples. A number of surveys addressing attitudes toward large carnivores have been conducted, but they

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have frequently been rather descriptive, and somewhat lacking in explanatory power (see, for example, Williams et al. 2002; Rodriguez et al. 2003; Lohr et al. 1996).

Furthermore, it is difficult to distinguish between independent and dependent variables in some studies. This is the case, for example, when positive attitudes toward wolf restoration are seen as being predicted by positive attitudes toward wolves (Enck and Brown 2002). There is a danger of verging on the tautological if attitudes are not situated within a broader social context. The work of Manfredo and associates represents a significant advance. Based on survey data, they have developed the concept of wildlife value orientations: attitude profiles that are seen as being closely related to basic value sets (Manfredo et al. 2003; Bright et al. 2000). They have analyzed these value orientations against a background of broad cultural change, understood as a shift from materialist to postmaterialist values (Inglehart 2003). It is necessary, however, to supplement the perspective centering on a “postmaterialist” culture shift, the notion of “values” guiding “behavior,” and the broad generalizations that are found in Inglehart’s work.

Bjerke and associates have employed sophisticated theoretical frameworks in analyses based on survey data. They have written on the significance of *locus of control* and *ecocentric versus anthropocentric value orientations* in the formation of attitudes toward large carnivores (e.g., Bjerke et al. 2000). However, these mechanisms were studied separately and pertain to somewhat limited aspects of attitude formation—as is typical of quantitative research.

Building on Qualitative Research

Recent qualitative research, on the other hand, has revealed a complexity that has so far been inadequately captured in survey studies. In particular, the understanding of cultural patterns as mediators between structural factors and attitudes toward wildlife has been advanced through studies in the United States (Wilson 1997), France (Mauz 2002), and Norway (Skogen 2001; Skogen and Krange 2003). However, the limitations of qualitative methods call for additional investigation in order to assess the representativeness and robustness of the findings. The task at hand, then, is to construct a model that captures the mechanisms that have been discerned in qualitative studies, and to employ this model in a study using data derived from a large representative sample. In this article we concentrate on attitudes toward wolves—a controversial species throughout its range. As such, the species may be the subject of particularly intense emotions and differ from other wildlife and conservation issues in that respect, but it may also help us see social mechanisms that affect other controversies, albeit in a less clear-cut manner. Studying extreme phenomena may serve as a magnifying glass for social mechanisms that are widespread and of great significance, but that may predominantly appear in more subdued forms.

Drawing on survey material collected in Norway in 2000 (Bjerke et al. 2003), we attempt to situate attitudes within a broader sociocultural context and identify relationships between relevant culture elements and structural factors. The qualitative studies that guided the development of several instruments in the questionnaire took place in southeastern Norway starting in 1999, and included in-depth interviews, focus groups, and some participant observation. Around 170 informants from rural areas with large carnivores provided data through one or more of these techniques. This research has been reported extensively elsewhere (Skogen 2001; Skogen and

Krange 2003). The studies were only partly finished when the survey started, but the general direction of the findings was relatively clear at the time. Finalized in 2002, they have been instrumental to developing the analytical model employed here. However, we also make use of findings from other qualitative studies where relevant.

Although our model is constructed primarily on the basis of qualitative research, we also draw upon previous survey research. Despite limitations, surveys have identified several factors that influence attitudes toward wolves. Furthermore, quantitative research addressing environmental orientation more generally (i.e., not specifically related to wildlife) has identified mechanisms that appear to be relevant as well.

In statistical jargon, our purpose is to assess the effect of variables that may be considered exogenous to the “wolf field.” We want to identify groups that have something in common *outside* this field—groups that share more than opinions on wolf management—in order to better explain *why* people take the stance they do. We may thus also throw light upon mechanisms of a more general nature: mechanisms that we can assume to operate in other controversies over land use and conservation as well. We attempt to accomplish this by way of an analysis that targets the sociocultural level in particular, while retaining relevant structural factors and the relationship between the two levels.

Elements Included in the Model

The Urban–Rural Axis

A number of studies have pointed to the urban–rural dimension. Rural people are more negative toward wolves because they are more likely to perceive them as a threat to rural economic activities and leisure pursuits (Williams et al. 2002; Bjerke et al. 1998). Not surprisingly, susceptibility to adverse material consequences is, in itself, found to have a negative impact on attitudes toward wolves (Bjerke et al. 2000; Rodriguez et al. 2003; Williams et al. 2002). Hunters in wolf areas have also been identified as having predominantly negative attitudes, but the latter finding is not consistent across studies (Ericsson and Heberlein 2003; Bright et al. 2000; Naughton-Treves et al. 2003; Williams et al. 2002). Qualitative work has shown that conflicts over large carnivores, and particularly wolves, may play a significant role in the symbolic construction of rural communities. The construction of a stark contrast between the good country life and the problematic, stressful urban existence comes close to a contrast between good and evil. Many rural people see the pro-wolf lobby as “city people” and “extremists.” Consequently, the appearance of wolves is associated with urban life and urban values. Through this construction, the wolf becomes an icon not of wilderness, but of urbanity (Skogen and Krange 2003).

Social Class and Education

Our own qualitative studies clearly indicate that class background plays a role in the formation of attitudes toward wolves. For people in areas with wolves, this process seems to originate partly in the uneven distribution of tangible problems such as livestock depredation and loss of dogs used for types of hunting that are more common in some social groups than in others. But it also appears that class *cultures* play a part, regardless of personal vulnerability. Put simply, the tendency seems to be that

working-class people and farmers are more negative toward wolves than are middle-class people (Skogen 2001; Skogen and Krange 2003). It is, of course, important to gauge the role of class cultures in the general population, not only in areas with large carnivores.

Some quantitative studies focusing on environmental orientation have treated class as a crucial issue. Class has been found to influence environmental orientation—particularly affinity toward modern environmentalism. Studies conducted in several countries during the last 30 years have concluded that the environmental movement derives its fundamental support from those groups within the middle class that are highly educated; employed in “nonproductive” sectors; and have incomes in the medium range (Cotgrove and Duff 1980; Kriesi 1989; Skogen 1999). A plausible interpretation is that the exploitation of nature is an integral part of the global process of modernization and rationalization, which opens up new fields of conflict (e.g., over the environment), not least because of the relative independence from the material production process and related core processes in capitalism experienced by growing parts of the population, particularly by the “new” middle class (Eder 1993). These social segments’ relatively limited influence on important economic factors leads to an increased emphasis on alternative values (Eder 1993; Skogen 1999). Whether or not members of these groups actually pursue antimaterialist lifestyles is another matter, but it has become an ideological beacon for many of them.

Our previous qualitative work has helped us to understand the apparent congruence in the positions on environmental issues found among the working class, farmers, and the “bourgeoisie” (i.e., the “true” upper class): ties to material production and thus to resource extraction and economic expansion, that is, the driving forces behind processes that some people would label “environmental destruction.” This creates a cultural commonality: the defense of material production and associated values against the expansion of the new middle class, entailing, among other things they see as undesirable, extensive environmental protection based on a romantic view of nature as delicate and vulnerable, always threatened by human activities (Skogen 1999; Skogen and Krange 2003).

Cultural Capital

As a supplement to an understanding of societal power and class relations as originating only in the economic sphere, Bourdieu (1984) introduces culture as another axis of domination. Bourdieu’s concept of *cultural capital* encompasses familiarity with and access to the legitimate and dominant culture. According to Bourdieu, cultural assets can be considered as capital insofar as they are useful for acquiring credentials and gaining respectability and to the extent that they pave the road to positions of power. The new middle class tends to attribute more weight to cultural capital than to economic capital, perhaps partly to compensate for their lack of the latter, but also because their societal position facilitates a critical stance toward significant features of capitalism (Eder 1993). Although the notion of culture as *capital* may be problematic, we employ the term here because it connotes a connection between cultural assets and power, and has come to be widely used for that reason.

Knowledge about the environmental situation, as defined in the hegemonic discourse, and a “correct” perception of nature could be considered as cultural capital today. Different conceptions of nature are embedded in different social and cultural contexts, and are thus either dominant or subject to domination. One example is the

modern middle-class notion of nature, which expresses rejection of a utilitarian relationship with nature and the unaesthetic consequences of capitalism (Macnaghten and Urry 1998; Eder 1996). Canadian forest workers and Norwegian rural working-class hunters have been found to agree with environmentalists on forestry issues, while at the same time aggressively denouncing the environmental movement (Skogen 2001; Dunk 1994). Amount of cultural capital was found to be a strong predictor of environmental activism in studies of Norwegian youths (e.g., Strandbu and Skogen 2000).

Political Orientation

Findings from qualitative studies indicate that traditionalist and even antimodern views are closely related to opposition to wolves. This is definitely not the only ideological framework for carnivore resistance, but in its varieties it appears to be the predominant platform for such views (Krange and Skogen 2007). As already mentioned, many rural people see the qualities of rural communities as being diametrically opposed to the chaotic and unpleasant nature of the city (the very icon of modernity) and their life in the country as a negation of city life. It seems appropriate to understand their love of the countryside and their skepticism toward urbanity not merely as preferences, but as critical attitudes toward the general development of modern society. This development means that a wide range of traditional values are subject to erosion and change. One such shift pertains to the increased focus on nature conservation—seemingly based on the notion that human resource use is intrinsically detrimental—at the expense of resource utilization. The active maintenance of traditional rural activities as part of expressive identity projects, a deep skepticism to outside influence, and cultivation of a distinct working-class masculinity were characteristic features of anticarnivore hardliners in the Norwegian qualitative studies (Skogen and Krange 2003; Krange and Skogen 2007).

Knowledge and Trust

Qualitative research has shown that *rival knowledge systems* play an important part in shaping the carnivore conflicts (Mauz 2002; Skogen 2001). Schisms originating from the tension between scientific knowledge and lay knowledge will overlap and merge with conflicts stemming from tensions between hegemonic and subordinate cultural forms. Working-class people, whether rural or not, frequently put up *cultural resistance* in many spheres of life by actively defending practical experience and ridiculing academic knowledge and academics (Willis 1977; Dunk 1994; Krange and Skogen 2007).

The struggle against the current conservation ideology may be at least partially understood as cultural resistance against power structures and social trends in contemporary society. Thus, regarding the perception of so-called factual knowledge about wolves, the issue of trust in different information providers is vital. We may anticipate that such trust depends upon the credibility ascribed to the people who deliver the information by the people who receive it, and that perceived credibility is influenced by factors such as those discussed here. Other authors have described similar mechanisms in connection with other aspects of environmental attitudes (cf. Wynne 1996; Dickens 1996; Burningham and Thrush 2003).

The Local Dimension: The Symbolic Construction of Community

Our qualitative studies indicate that carnivore skeptics, regardless of social position, claim that “the power elites” do not respect *local* knowledge. Politicians, managers, biologists, and conservationists are frequently perceived as one alliance that possesses a great deal of power. Working-class people tend to be outspoken on this issue, whereas some well-educated landowners, for example, express themselves in more modest terms. Nevertheless, defense of what is perceived as being *local* knowledge appears to be a lynchpin in the “symbolic construction of community” (Skogen and Krangle 2003). This is a process in which groups that do not necessarily have common interests collectively construe the small rural community as a threatened idyll. Landowners, farmers, and working-class hunters all talk about *our* way of life as threatened by current carnivore management and that the presence of wolves in particular is seriously disturbing the ways *we* use the land. This is clearly not a simple reflection of common lifestyles and land-use practices. Furthermore, the ways in which these groups use the land may indeed conflict with each other, and to some extent may even reflect antagonistic economic interests—for example, between landowners who want to maximize their profits from hunting and the local working-class hunters who have to pay for it (Skogen and Krangle 2003). However, cultivation of rusticity and the (imagined) rural community as a defense against urban expansion appears to be a unifying identity factor.

Research Issues

Our aim is an improved understanding of the relationship between attitudes toward wolves and the factors discussed earlier. As a measure of attitudes toward wolves, we use respondents’ opinions of the desirable population size. Numerous other aspects were included in the survey, but we need a condensed measure that is meaningful regardless of actual wolf presence. We aim here at gauging respondents’ cognitive views of how desirable it is to have a larger or smaller population of wolves, and the instrument does not relate in any explicit way to the practical or even emotional consequences of having the species around. A similar measure has been used in other studies (Naughton-Treves et al. 2003; Bjerke et al. 1998). Henceforth, we refer to this attitude measure as the (dependent) population size variable. We expect that background factors such as rural versus urban place of residence, educational level, and cultural capital will affect people’s views regarding the size of the wolf population. By means of variables derived from what we might term a “cultural level,” we aim to shed light on processes that bring about these correlations. To this end, we offer four potential mechanism variables linking the background variables to the dependent variable. With reference to our previous account, two of the mechanism variables are environmental orientation (measured as ecocentrism) and traditionalist political orientation. The two final variables, which are related to trust in different information sources, are grouped into two categories: local informal information sources, and institutional information sources. We argue that trust in one or the other captures dimensions of local or nonlocal orientation (related to perception of “community”) as well as identification with knowledge type: lay knowledge or scientific knowledge, respectively. In the next section, we describe the model that connects the background variables, the endogenous mechanism variables, and the dependent population size variable.

Model

In our analysis, we treat the background variables of education, cultural capital, and urban–rural as exogenous. That is, we assume that these variables do not change as a result of changes in any of the other variables in the model. Although cultural capital may not be a “pure” background variable, we treat it as such here, and consider the combination of educational level and cultural capital to be a proxy for class that captures its sociocultural dimension. Also included as exogenous control variables are age and gender, but for the sake of brevity, we do not comment on the effects of these variables. The direct path from education, urban–rural, and cultural capital to the dependent variable in Figure 1 sums up our general expectation that these background variables influence people’s attitude towards the size of the wolf population.

The model in Figure 1 also incorporates four latent endogenous variables. We suggest that traditionalist political orientation and ecocentrism represent a more general level of cultural orientations than do the variables we employ in order to tap the combination of local/nonlocal orientation and favored type of knowledge: trust in informal and in institutional information sources, respectively. This is because the instrument addresses information about large carnivores specifically. Accordingly, the two former latent variables are placed on the left-hand side of the box containing the latent mechanism variables. In contrast, the double-headed arrows between political traditionalism and ecocentrism and between local and institutional trust symbolize the assumption that the causal dependence between these latent variables could go either way. We acknowledge that this is a problematic simplification, but it is a type of simplification that is necessary in order to construct any statistical model.

We expect that the four latent variables are determinants of the population size variable. Furthermore, we anticipate that the variables on the left-hand side on the

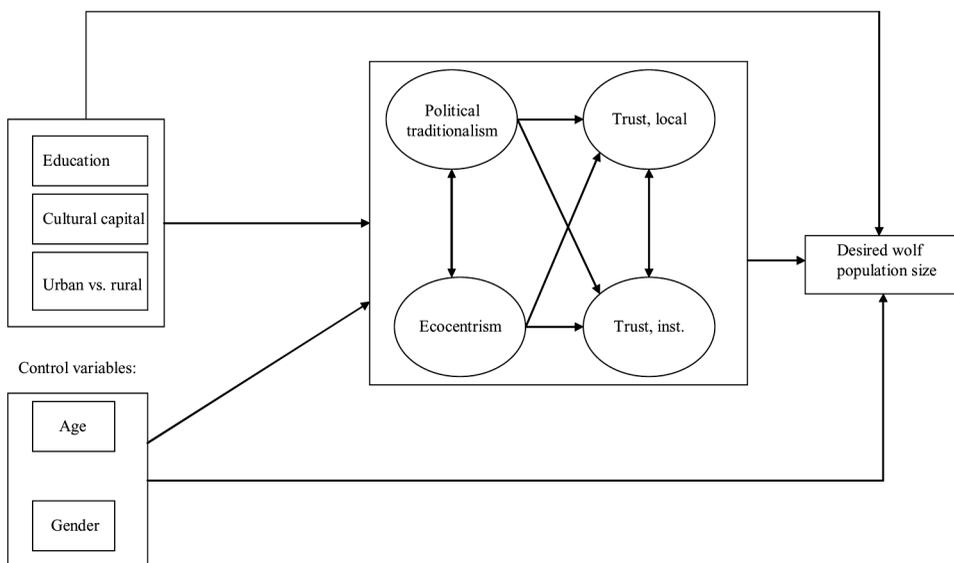


Figure 1. Conceptual model linking background variables, endogenous variables, and wolf population size. Rectangles = manifest variables; ovals = latent variables. The individual effects of the various variables are not shown in order to avoid clutter.

model—education, cultural capital, and urban–rural—may influence the population size variable indirectly via the four latent mechanism variables. In other words, the four latent variables may also serve as mediators of the effects from the background variables.

Data and Methods

On the basis of a representative sample of the Norwegian population (15 years and older) in each of the 19 Norwegian counties, 3500 respondents were recruited by telephone. To reach the target sample, 7953 persons were contacted initially. This procedure was used to obtain a correct proportion between the counties and a 50/50 distribution of male and female respondents, and because the Norwegian Data Inspectorate is restrictive regarding follow-up contact with survey respondents. A comparison with official statistics shows that the age distribution and the urban/rural ratio resemble the population, whereas the educational level is higher in the sample than in the population. The latter is unfortunately normal in surveys. The questionnaires were sent by post in late 2000. After 10 days, a reminder was sent to everyone, and a second reminder (with a new copy of the questionnaire) was posted 3 weeks later. Of those recruited for the study, 73% completed and returned the questionnaire. The questionnaire included a wide variety of instruments designed to tap opinions about carnivores as well as background factors and various forms of cultural (value) orientations. A majority of these instruments served other purposes than checking the validity of qualitative research findings. After excluding observations with missing values, 1517 observations remained for analysis.

Manifest Variables

The education variable captures a dimension of social class that we may anticipate to be related to cultural capital. It also provides us with an ordinal measure that could be treated as a continuous variable—something we would not have if we were to use occupation as the basis for assigning class positions. Education was measured with a 4-point variable (primary school only = 0; ≥ 4 years in college = 3). We used a simple indicator for cultural capital: number of books in the home. Although crude, this measure has been productive in other studies where it has been found to affect behaviors like smoking and attitudes like racism, as well as involvement in environmental youth organizations (e.g., Pedersen 1996; Strandbu and Skogen 2000; Krange and Pedersen 2001). The measure does not, strictly speaking, relate to the notion of cultural *capital*; rather it gauges respondents' broad intellectual orientation. As previously stated, however, we use the term because it denotes a connection between cultural assets and power. The question was worded as follows: "How many books do you think there are in your home? One meter of bookshelf is the approximate equivalent of 50 books" (none = 0; less than 20 = 1; 20–100 = 2; 101–500 = 3; 501–1000 = 4; $> 1000 = 5$).

The urban–rural variable had five values: city ($> 40,000$) = 0; larger town (10,000–40,000) = 1; smaller town (3000–10,000) = 2; village (< 3000) = 3; and hamlet or countryside = 4.

The wolf population size variable was measured as response to the question, "What is your opinion about the size of the present Norwegian wolf population?" *Should be eliminated altogether* = -3 ; *should be reduced significantly* = -2 ; *should*

be reduced somewhat = -1; *should be kept at the present level* = 0; *should be increased somewhat* = 1; *should be increased significantly* = 2.

Age was an ordinal variable with 6 values: 15–24 years = 1; 25–34 years = 2; 35–44 years = 3; 45–54 years = 4; 55–64 years = 5; 65 years or more = 6.

Latent Variables

The New Ecological Paradigm scale (NEP) is an instrument designed to tap the endorsement of an “ecocentric” worldview (Dunlap et al. 2000; Gooch 1995; Scott and Willits 1994). The original instrument consists of 15 statements (Dunlap and Jones 2002). Due to limited space in the questionnaire, we selected eight items used in previous studies (Skogen 1999): (1) *The balance of nature is very delicate and easily upset*; (2) *Humans have the right to modify the natural environment to suit their needs*; (3) *Humans are severely abusing the environment*; (4) *The so-called “ecological crisis” facing humankind has been greatly exaggerated*; (5) *The balance of nature is strong enough to cope with the impact of modern industrial nations*; (6) *If things continue on their present course, we will soon experience a major ecological catastrophe*; (7) *Human ingenuity will ensure that we do not make the earth unlivable*. Before the constriction of the scale, the response coding for items 2, 4, 5, and 7 was reversed. The item “Plants and animals have as much right as humans to exist” was dropped from the analysis because its inclusion lowered the overall reliability of the scale. Before the constriction of the scale, the response coding for items 2, 4, 5, and 7 was reversed. The current ecocentrism scale has a Cronbach’s alpha of .72.

Political orientation was measured by 14 statements about political issues. The 5-point scale ranged from “strongly agree” to “strongly disagree.” A traditionalist political orientation index was constructed based on five items tapping aspects of this political inclination: *Stronger punishment is required for serious crimes, like violence and narcotics*; *The government should have fewer opportunities to interfere with people’s private lives*; *It is important to reduce taxes on cars and fuel*; *We must limit immigration from countries that have a culture very different from the Norwegian culture*; *Mothers should stay at home when the children are small*. Cronbach’s alpha was .70.

An instrument comprising ten items was used to measure the level of trust people had in various information providers. Respondents were asked to state the degree to which they trusted different categories of people. We sorted the items into two groups, in order to create one scale for trust in information sources of an informal and predominantly local character, and one scale for trust in information sources of a predominantly institutional character. The “local/informal trust” scale comprised the items: *experienced hunters*; *sheep farmers*; *people who live in areas with large carnivores*; *local politicians from areas with large carnivores*; *people you know personally*. Cronbach’s alpha was .75. The “institutional trust” scale comprised the items: *carnivore biologists*; *representatives from the national pro-carnivore NGO “Our Carnivores”*; *employees of the Directorate for Nature Management*; *members of Parliament*. Cronbach’s alpha for this scale was .73. An item referring to newspapers and TV was dropped because it lowered the reliability of the scale.

Analysis

The model conceptually depicted in Figure 1 was estimated within a structural equation modeling (SEM) framework (Muthén and Muthén 2004). In addition to

the chi-square, the overall model fit was examined in light of the fit indices Comparative Fit Index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). According to Hu and Bentler (1999), a CFI approaching .95 from below indicates a satisfactory model fit. Furthermore, values of .06 and .08 or lower are considered to represent an acceptable model fit for the RMSEA and SRMR, respectively (Hu and Bentler 1999). Two SEM models were estimated. In the first model, none of the residuals in the measurement models of the latent variables were allowed to correlate. This model fit the data moderately well (chi-square = 1076.27; 1076.27; $p < .01$; CFI = .895; RMSEA = .048 with CI = .045, .051; SRMR = .047). In the second model, some of the residuals within each latent variable, as suggested by a model modification procedure, were allowed to correlate. The results of this second model, for which the model fit is more satisfactory, appear in Table 1.

Results

Bivariate correlations between manifest variables (table provided on request) suggest that people with higher education want a larger wolf population than do people with a more limited education ($\beta = .26$; $p < .01$). The effect of cultural capital indicates that people living in homes with many books tend to want a larger wolf population than do those living in homes with fewer books ($\beta = .15$; $p < .01$). People living in rural areas want smaller wolf populations than do people living in more urban environments ($\beta = -.30$; $p < .01$). There is also a positive correlation between education and cultural capital ($\beta = .35$; $p < .01$). Finally there is a negative association between urban versus rural and cultural capital ($\beta = -.14$; $p < .01$).

Table 1 presents all the maximum likelihood estimates (i.e., unstandardized regression coefficients) and standard errors for the final SEM model. In Figure 2, the most important standardized regression coefficients (β s) from this model are displayed. For ease of presentation and to highlight the most important results, only the significant effects at $p < .01$ are depicted. As one might expect, education ($\beta = -.40$) and cultural capital ($\beta = -.23$) are focal determinants of political traditionalism, insofar as more education or greater cultural capital is indicative of a less traditional political orientation. In contrast, among the exogenous variables only cultural capital has a positive effect on ecocentrism ($\beta = .08$). We also note that the urban-rural axis does not influence political traditionalism.

Education and cultural capital have negligible direct effects on trust in information either from local, informal sources or from institutional sources. Urban versus rural, however, has a clear impact on both these variables. People living in rural areas trust information from local sources to a greater degree than do people living in more urban environments ($\beta = .13$), whereas people living in urban areas trust information from institutional sources to a greater extent than do rural people ($\beta = -.14$).

Political traditionalism is positively associated with trust in local sources ($\beta = .23$) and somewhat negatively associated with trust in information from institutional sources ($\beta = -.09$). (The latter effect is not portrayed in Figure 1, as it was significant only at $p < .05$.) In contrast, ecocentrism is positively correlated with trust in information from institutional sources ($\beta = .31$) and negatively correlated with trust in information from informal sources ($\beta = -.11$).

All the latent variables except political traditionalism have direct effects on the dependent variable. In this respect, the negative relationship between trust in

Table 1. Multivariate relationships among background variables, endogenous variables, and dependent variable

Independent variables	Political traditionalism	Ecocentrism (NEP)	Trust, local	Trust, institutions	Wolf population size
Education	-.20 (.02)**	.00 (.02)	.00 (.01)	.01(.02)	-.00 (.03)
Urban vs. rural	.02 (.00)*	-.03 (.01)*	.04 (.00)**	-.08 (.01)**	-.06 (.02)**
Cultural capital	-.11 (.02)**	.06 (.02)**	-.02 (.00)*	-.02 (.02)	.06 (.03)*
Political traditionalism			.14 (.03)**	-.10 (.05)*	-.16 (.09)
Ecocentrism (NEP)			-.05 (.01)**	.25 (.03)**	.19 (.05)**
Trust, local					-1.5 (.19)**
Trust, institutions					.83 (.10)**
Political traditionalism ↔ NEP					
Trust, local ↔ Trust, institutions					
Model chi-square/DF					
CFI					
RMSEA					
90 CI for RMSEA					
SRMR					

Note. Standard errors are in parentheses. All the unstandardized path coefficients are controlled for the effects of age and gender; $N = 1523$. One asterisk indicates statistical significance at $p < .05$; double asterisk indicates statistical significance at $p < .01$.

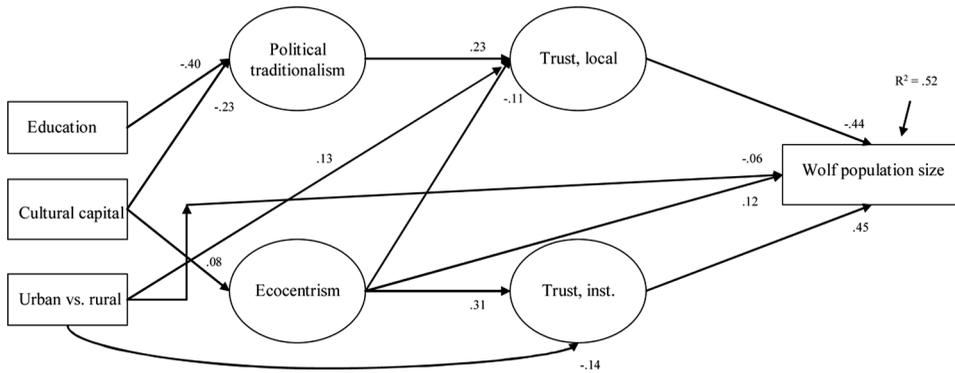


Figure 2. Final structural SEM model based on the estimates in Table 1. Figures are standardized regression coefficients (β s). Not shown are the correlations between political traditionalism and ecocentrism ($\beta = -.15$) and between trust in information from local people and trust in information from institutional authorities ($\beta = -.15$). All paths are significant at $p < .01$.

information from local sources and the population size variable ($\beta = -.44$) and the positive relationship between trust in information from institutional sources and the population size variable ($\beta = .45$) are crucial findings. In other words, people who trust institutional sources want to see a larger wolf population in Norway, whereas people who trust local sources want fewer wolves. Finally, there are significant negative correlations between political traditionalism and ecocentrism ($\beta = -.15$) and between the variables measuring trust in information from local sources and trust in information from institutional sources ($\beta = -.15$). Both of these negative correlations make sense: Typical traditionalists are not “ecocentrics” (or vice versa), and those who trust information from informal sources do not typically trust information from institutional sources (or vice versa).

Both Figure 2 and Table 1 show that education does not appear to have a direct effect on the dependent wolf population variable. Cultural capital and urban versus rural, in contrast, seem to have significant direct effects on the dependent variable, although both are modest ($\beta = .06$ and $\beta = .06$). However, Figure 2 also suggests that education, cultural capital, and urban versus rural have *indirect* effects on the dependent variable. The results in Tables 2, 3, and 4 shed additional light on these effects.

As can be seen in Table 2, education has only a modest total effect on the dependent variable ($\beta = .092$). More important, however, this effect is entirely indirect. Of the specific indirect effects, the most vital process goes from education via political traditionalism and trust in information from local, informal sources to the dependent variable ($\beta = .041$). The other significant indirect effect goes through political traditionalism and trust in information from institutional sources. Combined, these indirect effects account for 56% of the total indirect effect $[(.041 + .016)/.101 = .564]$.

Table 3 shows that cultural capital also has a modest total effect on the dependent variable ($\beta = .152$). Slightly more than half of this effect is indirect ($\beta = .089$). The main indirect processes go via (a) political traditionalism and trust in information from informal sources ($\beta = .024$) and through (b) trust in information from

Table 2. Total, direct, and significant indirect effects of education: Standardized path coefficients (β s)

Parameter	β	SE
Total effect	.092**	.034
Indirect effect	.101**	.028
Direct effect	-.009	.003
Indirect effect via:		
Political traditionalism \rightarrow Trust, local	.041**	.009
Political traditionalism \rightarrow Trust, institutions	.016*	.008

Note. SE, standard error. One asterisk indicates statistical significance at $p < .05$; double asterisk indicates statistical significance at $p < .01$.

informal sources only ($\beta = .029$). Taken together, these specific indirect effects account for 60% of the total indirect effect $[(.024 + .029)/.089 = .595]$.

Finally, Table 4 suggests that urban versus rural has a noteworthy total effect on the dependent variable ($\beta = -.201$), about 71% of which is indirect $[(-.143)/(-.205) = .711]$. Table 4 also suggests that the two most important processes linking urban vs. rural and the dependent variable, population size, are trust—either in information from local, informal sources ($\beta = .056$) or in information from institutional sources ($\beta = .064$). These two effects account for 84% of the total indirect effect $[(.056 + .064)/.143 = .839]$.

The model estimated in Table 1 (cf. Figure 2) explains about 52% of the variance in the dependent variable. As a comparison, we also estimated a regression analysis in which only the background variables, as well as age and gender were considered (results available on request). This model explained 24% of the variance (R^2) in the dependent variable (adj. $R^2 = .237$). Thus, the introduction of the four latent variables in the model specification increases the amount of explained variance (R^2) considerably.

Table 3. Total, direct, and significant indirect effects of cultural capital: Standardized path coefficients (β s)

Parameter	β	SE
Total effect	.152**	.030
Indirect effect	.089**	.002
Direct effect	.062*	.027
Indirect effect via:		
Political traditionalism \rightarrow Trust, local	.024**	.006
Political traditionalism \rightarrow Trust, institutions	.009*	.005
Ecocentrism \rightarrow Trust, institutions	.011**	.004
Ecocentrism \rightarrow Trust, local	.004*	.002
Ecocentrism	.010*	.004
Trust, local	.029*	.012

Note. SE, standard error. One asterisk indicates statistical significance at $p < .05$; double asterisk indicates statistical significance at $p < .01$.

Table 4. Total, direct, and significant indirect effects of urban vs. rural: Standardized path coefficients (β s)

Parameter	β	SE
Total effect	-.201**	.021
Indirect effect	-.143**	.016
Direct effect	-.058**	.019
Indirect effect via:		
Political traditionalism \rightarrow Trust, local	-.005*	.002
Ecocentrism \rightarrow Trust, institutions	-.006*	.003
Trust, institutions	-.064**	.011
Trust, local	-.056**	.010

Note. SE, standard error. One asterisk indicates statistical significance at $p < .05$; double asterisk indicates statistical significance at $p < .01$.

Summary and Discussion

We may conclude that a model based on the elements that have emerged as being theoretically relevant in recent qualitative studies is a feasible model that confirms anticipated mechanisms. Introduction of latent variables derived from what we have termed a cultural level significantly boosts the explanatory power of the model. We also see that the direct effects of background variables are reduced or disappear when the latent variables are included, implying that the operative mechanisms are to be found, to a considerable degree, at this cultural level. However, the latent sociocultural variables are clearly also related to structural background factors.

If we accept the combination of education and cultural capital as a proxy for the cultural dimension of class, we observe that this dimension has an impact on attitudes toward the size of the wolf population. However, this effect operates almost entirely through the more specific cultural factors defined as endogenous variables in our model. The impact on the dependent variable is modest, but the impact on political traditionalism is considerable: The more education and the more cultural capital a person possesses, the less likely he or she is to hold traditionalist views. There is also a significant impact of cultural capital on ecocentrism, in that a person with a large amount of cultural capital is more likely to endorse such views.

There is no direct effect of education on ecocentrism. It appears that the number of books in the home is a stronger indicator of a value orientation that is associated with ecocentrism than is formal education level. This finding is in line with the research that has tied this type of environmental orientation to the new middle class in particular (e.g., Skogen 1999). It is important to note that the NEP scale only measures adherence to a certain perspective on human relations to nature, and not "love of nature" in a wider sense.

Political traditionalism as well as ecocentrism affects the level of trust in the two types of information sources: local and informal versus institutional. The greater the endorsement of political traditionalism and the less the endorsement of ecocentrism, the more trust there is in local and informal sources. The effect of traditionalism is notable, whereas the effect of ecocentrism is weaker. However, an ecocentric orientation also predicts trust in institutional sources, whereas there is no inverse effect of

traditionalism. In addition, there is a positive relationship between ecocentrism and attitudes toward the size of the wolf population.

Trust in local, informal sources strongly indicates negative attitudes towards a large wolf population, and trust in institutional sources equally strongly predicts a positive attitude. The idea behind the “trust instrument” was to touch upon the double set of tensions between hegemonic academic knowledge and subordinate lay knowledge, and between an inward community orientation and an outward orientation. An inward, local orientation may arguably be tied to the “symbolic construction of community,” which qualitative research has identified as being connected to wolf skepticism, a skepticism that includes seeing wolf protection as part of a wide-ranging external threat to rural communities (Skogen and Krangle 2003).

Returning to the structural level and the exogenous variables, we see that the urban–rural axis is important. This variable is the only one that maintains its direct effect even when the endogenous variables are introduced: Living in a rural area predicts a more negative attitude toward large wolf populations. It does not affect political traditionalism or ecocentrism, but living in a rural area increases the probability of trusting local informal information sources.

Perceived material and economic impact of wolf presence is not included in the model because this affects very few respondents in a national sample, and the effect of rurality on attitudes toward the size of the wolf population is probably partly related to the experience people have with wolf problems or their ability to identify with those who do experience them. In addition, qualitative research has indicated that people from different social backgrounds tend to perceive external threats to rural communities and rural lifestyles in ways that are largely similar (Skogen and Krangle 2003). This is the basis for the “symbolic construction of community”: a collective interpretation of external threats that masks diverging material interests and a substantial cultural diversity.

The model shows that the sociocultural level does play a significant part in shaping attitudes toward wolves. Opinions of wolf population size seem to be tightly bound to general value orientations, and we observe a connection between these value orientations and the cultural dimension of social class. This relationship is not perfect (e.g., there is an effect of rural place of residence regardless of social status), but there is a distinct pattern. Two ideal types may be extracted from Figure 2: A person who wants to reduce the wolf population typically has limited education, has limited cultural capital, holds traditionalist political views, does not endorse the NEP, and identifies with informal knowledge that originates in a local context. A person who wants to see a larger wolf population, on the other hand, typically has more education, more cultural capital, does not subscribe to traditionalist political views, endorses the NEP, and trusts institutional information sources over informal ones. Based on insights from qualitative research, it appears that a negative attitude to wolves is sometimes part of a “resistance toolbox,” also entailing opposition against hegemonic (institutionalized) knowledge and political views (including ecopolitical perspectives) that are deemed politically correct in the expansive new middle class. The growth of this social segment and its increasing cultural hegemony—a basis for *symbolic power* (Bourdieu and Thompson 1991)—is perceived as threatening by people who are rooted in a production-oriented culture (Skogen 1996) and who are subjected to patronizing correctional efforts on a broad front. Modern conservationism, including protection of large predators, is emblematic of social processes that drive traditional working-class culture into a corner, and

may be perceived as threatening livelihoods and traditional leisure activities through its powerful antiproductivist position.

People's stance in relation to various other conservation issues is necessarily molded in the same sociocultural matrix. Thus, an understanding of the structural and cultural context of conservation controversies is essential in order to come to grips with them. This means that such insights are also very practical: Seeing conflicts primarily as disagreements over land use is not constructive to the extent that we actually face social tensions that have much deeper societal roots.

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