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Article

# Rurality and Collective Attitude Effects on Wolf Policy

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**Abstract:** Debates over wolf policy are driven by an underlying attitudinal divide between people from urban and rural areas. This study explores how the power relationship between urban and rural groups interact with individual attitude formation in relation to wolf policy, in order to understand why dissatisfaction with wolf policy tends to result in group level conflict patterns. Using Swedish survey data, I analyze attitudes to wolf policy, in relation to collective level effects and rural political alienation. Findings indicate that individual level attitudes towards the Swedish wolf policy are in part determined by collective attitude patterns: effects that could be contingent on political alienation. This highlights the possibility of reducing attitude polarization with respect to the wolf policy, by addressing political alienation among the rural population.

**Keywords:** wolf; rural-urban divide; political alienation; rurality; conservation policy; collective attitude effects

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## 1. Introduction

A global trend of conservation based policies have led wolves to return to a number of areas from which they had previously been removed by humans [1]. Yet, human activity continues to impact the growth of wolf populations, and our actions remain central to the success of conservation based policies. Consequently, how policies and institutions are designed to guide governance and management is key to the future development of the wolf as a species. This fact emphasizes the need for an increased understanding of the interaction between social and ecological change, and public attitudes towards wolf policy, in order to develop policies and methods of wolf conservation that are perceived as legitimate [2,3].

There is a well-established urban-rural attitudinal divide to conflicts relating to wolves and wolf policy [4]. People living in rural areas tend to have more negative attitudes towards wolves compared to people living in urban areas, and consequently tend to favor more restrictive wolf policies [1,5]. Previous studies have established that this urban rural divide can be explained by a combination of ecological, social, and political factors [6].

Wolves predominantly inhabit rural areas, and will thus affect people in rural areas to a larger extent than people in urban areas. Proximity to wolves [7] and direct experiences with wolves [5] have been found to make people less positive towards wolves, and thus growing wolf populations are likely to increase the attitude divide between urban and rural people over time [8]. Living close to wolves means reduced opportunities to hunt and a heightened fear for the safety of dogs, livestock, and people [2,8]; thus, wolf presence has a negative impact on attitudes towards wolves and wolf policy. The demographic structure of rural areas in Sweden further reinforces the attitude differences between rural and urban people, as factors more common among the Swedish rural population, such as hunting, a lower education level, old age, and being male, have been found to correlate with less positive attitudes towards wolves [1,5,9].

Social factors are important predictors of wolf related attitudes, and historical as well as cultural contexts contribute to the rural-urban attitudinal divide cf. [10,11]. Wolves once represented a considerable threat to agriculture and farming [12], and despite the fact that many rural areas no longer base their industry on farming and agriculture, a negative perception of the wolf still persists in rural areas. Rural populations view the wolf as an obstacle that prevents the use of nature in traditionally “rural” ways, which creates, and maintains, the perception of the wolf as incompatible with rural culture [12].

Previous research suggests that the wolf has an important symbolic value, that is related to political power [13]. Interview studies have indicated that, from a rural perspective, the reintroduction of wolves is sometimes perceived as an urban attempt to change the traditional role of rural areas: steering rural industry away from the production and refinement of natural resources, and towards supplying cultural ecosystem services [14]. Thus, there is a possibility that these underlying conflict patterns transform the wolf policy into an important political arena, where rural populations is presented with an opportunity to defend their culture from what they perceived as being a number of simultaneous infractions from urbanity [14]. Thus, the wolf policy risks becoming a vehicle for the social mobilization of rural discontent cf. [15] and becoming a symbol for rural struggle to resist the influences of urban political power and the struggle to maintain rural political autonomy [13,14].

Previous research on attitudes towards wolves has favored either quantitative methods and individual level measurements, or qualitative approaches examining broader patterns; and this has left the connection between the individual and collective level relatively unexplored in relation to attitude formation. Attitude formation is known to be influenced by a social context [16], and there are indications that political alienation could be central to these types of collective effects cf. [17–22]. A perceived lack of influence can result in a strengthening of group identity, which in turn has been observed to result in increased attitude polarization on a group level [17,18]. This type of mechanism is likely to affect attitudes towards wolf policy in rural areas, as attitudes towards wolves and wolf policy have been found to connect to rural identity and culture cf. [23–26].

Thus, the perceived imbalance in terms of political power between urban and rural segments of the Swedish public is likely to drive attitudes toward wolf policy among people that identify as rural [4,6,12], on an individual, as well as a collective level. Consequently, the attitudes of individuals towards the wolf policy is assumed to be affected by political alienation, and also by rural context and socialization on a collective level [13].

### *1.1. The Swedish Context*

Historically, the wolf has been regarded as a pest animal in Sweden. This led to extensive hunting, and left the Swedish wolf at the point of extirpation. However, increased legal protection and the immigration of a few individuals from Russia have allowed the wolf to return [27], and in 2015 there were approximately 328–538 wolves in Sweden [27,28]. The core of the Swedish wolf population is situated in central Sweden, where it is surrounded by various human activities, effectively preventing contact with other wolf populations [5]. From an ecological standpoint, most of the Swedish land area presents a suitable habitat for wolves. However, human activity severely limits the potential future growth of the Swedish wolf population, and this has made wolves a political issue, as choices must be made regarding the future development of the population [26,28].

The Habitats Directive provides legislative framework for maintaining the favorable conservation status of the wolf in the European Union [29]. This directive is then interpreted nationally, which in the Swedish case is through a national wolf policy goal [28]. Between the years 2001–2013, the Swedish policy goal stipulated a minimum number of annual wolf regenerations equal to 200 wolves [30]; this policy goal was then reformulated into a range corresponding to 170–270 wolves in 2013 [28].

Public support for the wolf policy is high in Sweden, and a majority of the population has a positive opinion of having wolves in the country. However, there is noticeable spatial variation, with clustering in the public support throughout the country [5,31], and public acceptance of the wolf

policy has decreased, in tandem with the growth of the Swedish wolf population [32]. This has also strengthened the previously observed trend of people in rural areas being less positive towards the wolf policy than people in urban areas [32–34].

### 1.2. Political Alienation and Collective Level Effects

The results presented above indicate that the perceived asymmetry in political power between urban and rural areas, across multiple policy areas, is likely to have left rural groups feeling excluded from the political system [14]: as a general pattern of “estrangement towards the political system”, or political alienation, can be observed within rural segments of the Swedish population [9]. Thus, it seems that people in rural areas perceive the political system and the policy making process within it as controlled by urban elites [9].

In the case of the wolf policy, this is likely to lead rural people to view the reintroduction of wolves as a form of political oppression by urban groups [12,14]. In combination with political alienation, this is likely to result in a rural perception of the wolf policy as illegitimate: as rural people come to question the fairness of policy processes that established the wolf policy [14].

In general, people in rural areas perceive wolves as a negative influence, a traditional enemy to rural culture that limits day-to-day activities [2]. Avoiding wolves is also often seen as necessity in order to perceive rural culture: both in a sense of maintaining traditional rural industry and defending political autonomy against urban interests [12,13]. Thus, the wolf policy become a symbol for the perceived imbalance in terms of political power between rural and urban areas, which is likely to affect attitudes towards wolf policy cf. [15,17,18]. The wolf policy became a symbolic issue of rural identity [17]: and this identification of the wolf policy as essentially “rural” suggests that there should be collective level determiners of individual attitudes towards the wolf policy cf. [17,18]. Previous research also suggests that existence of political alienation should further increase the likelihood of such collective level effects, as it has been noted to drive social movements and collective level perceptions of unfairness [19–22].

Attitudes towards wolves in Sweden have been observed to be clustered on the municipal level [31], and previous research also suggests that administrative regions are an important source of socialization in relation to political attitudes [17,18]. Thus, individuals are assumed to adjust their attitudes to the attitudes of those around them given that they live in the same municipality and are a part of the same rural context cf. [17,18]. Rural socialization with respect to the wolf, wolf policy, and urban areas are assumed to make people living in rural areas more politically alienated; and this is assumed to result in collective effects with respect to attitudes towards the wolf policy cf. [19–22]. Given these assumptions, I make the following predictions:

#### 1.2.1. Individual Level

P1: Respondents living in rural areas should report higher levels of political alienation than respondents living in urban areas.

#### 1.2.2. Collective Level

P2: Respondents living in municipalities where a large proportion of the inhabitants are negative towards wolves should be more likely to favour a reduction in the wolf policy goal.

P3: Respondents living in municipalities where a large proportion of people have a rural upbringing should be more likely to favour a reduction in the wolf policy goal.

P4: Respondents from municipalities where a large proportion of people are both negative towards wolves and have a rural upbringing should be more likely to favour a reduction in the wolf policy goal.

## 2. Materials and Methods

### 2.1. Data Collection

This study is based on the analysis of data obtained from two postal surveys conducted in 2004 and 2014 in Sweden, using a standard mail based methodology [35]. Due to Sweden's high rate of urbanization, a random sample on the national level would have contained very few rural respondents and because of this, sampling was performed on a municipal level. Each municipal sample comprised 150 randomly selected respondents, and proportional weighting was used to adjust for variations in the sizes of the sampled municipalities. The samples were primarily drawn from municipalities in counties of northern, and central Sweden, and the municipalities within the counties of Stockholm and Värmland were added to the sample in 2014. The 2004 survey had a total sample size over 10,000, and the 2014 survey had a total sample size over 16,000; the total response rates were 66% in 2004 and 41% in 2014. In 2004, the number of respondents in municipalities ranged between 82 and 144, and in 2014, the corresponding range was 25–81 (Table 1).

**Table 1.** Sampling and response rates from surveys in 2004 and 2014.

Year of Survey	Number of Municipalities Sampled	Number of Respondents Per Municipality (min–max)	Counties Sampled	Total Sample Size	Total Response Rate
2004	69	82–114	Dalarna, Gävleborg, Västernorrland, Jämtland, Västerbotten, Norrbotten	>10,000	66%
2014	111	25–81	Added, Värmland and Stockholm	>16,000	41%

### 2.2. Measurements

The majority of the survey items was originally measured on 5-point Likert scales with a neutral middle alternative. The questions were identical, with the exception of the question regarding Swedish wolf policy, which was updated in the 2014 to reflect policy changes from 2013 [28]. The items measured had all been found to relate to either attitudes towards wolves, wolf policy, or political alienation in previous studies. A majority of the demographic factors affected both wolves and political alienation, while support for the party in power has been studied in relation to political alienation [9,36]. A variable measuring if a respondent lived in a wolf county was also included in the analysis. This variable was based on wolf inventory reports rather than survey data, and counties that had at least one stable wolf the winter before the survey in question were coded as being a wolf county.

### 2.3. Recoding

Few of the measured variables (Table 2) maintained a linear effect when regressed against attitudes towards wolf policy, and consequently there were both empirical as well as theoretical grounds for recoding variables into binaries. The items measuring attitude towards wolf policy and attitudes towards wolves were both dichotomised, as previous research indicates that pro- and anti-wolf respondents should be analysed as two separate categories [9]. The two items measuring place of upbringing and current living area were also recoded into a rural urban dummy with the cut point set at 10,000 inhabitants, informed by previous research [31,37]. Similarly, level of education, direct experience with wolves, and support for a political party in government were also dummy coded. Year of birth was recoded into age and standardized. Political alienation was measured by four separate items, each measured on 4 degree Likert scales (Table 2).

Table 2. Overview of survey items.

Item Measured	Question Wording	Coding (Answer Alternatives)	Descriptive Statistics	
			2004	2014
Attitudes to Wolf policy (2004)	“In the spring of 2001, the Swedish parliament decided how many large carnivores we should have in Sweden. The first goals were set for the number of reproducing females, corresponding to at least 1000 brown bears (1500 lynx, 400 wolverines and 200 wolves). What is your opinion of the goals set by the parliament for large carnivores in Sweden?”	0: Do not favor a reduction of the wolf policy goal (Is acceptable, should be increased somewhat, should be increased a lot) 1: Favor a reduction of the wolf policy goal (Should be reduced a lot, should be reduced somewhat)	Mean = 0.30 N = 6225	NA
Attitudes to Wolf policy (2014)	“In 2013, the Swedish parliament decided how many large carnivores we should have in Sweden. These goals correspond to 170–270 wolves. What is your opinion of the set goals for large carnivores in Sweden?”	0: Do not favor a reduction of the wolf policy goal (Is acceptable, should be increased somewhat, should be increased a lot) 1: Favor a reduction of the wolf policy goal (Should be reduced a lot, should be reduced somewhat)	NA	Mean = 0.35 N = 6542
Attitudes to wolves	“What is your opinion of the fact that bears, wolverines, lynx and wolves exist in Sweden?”	0: Not negative towards wolves (Neutral, like, like strongly) 1: Negative towards wolves (Dislike strongly, dislike)	Mean = 3.6 N = 6227	Mean = 3.5 N = 6641
Age	“Which year were you born?”	Age in years (I was born 19XX)	Mean = 44.8 SD = 13.7 N = 6362	Mean = 47.4 SD = 13.9 N = 6718
Female	“Are you male or female?”	0: No (Male) 1: Yes (Female)	Mean = 0.49 N = 6360	Mean = 0.51 N = 6706
University educated	“What is your level of education?”	0: (Compulsory education, vocational education, senior high school) 1: (University education)	Mean = 0.23 N = 6341	Mean = 0.34 N = 6678
Hunting	“Does anyone in your household hunt or fish?”	0: No (Fish, no) 1: Yes (Hunt)	Mean = 0.35 N = 6333	Mean = 0.30 N = 6620
Political alienation (Item 1)	“In general, how satisfied are you with how democracy works in the EU?”	0: Not at all satisfied 1: Not particularly satisfied 2: Pretty satisfied 3: Very satisfied	Mean = 1.69 SD = 0.72 N = 6238	Mean = 2.16 SD = 0.77 N = 6568
Political alienation (Item 2)	“In general, how satisfied are you with how democracy works at the national level?”	0: Not at all satisfied 1: Not particularly satisfied 2: Pretty satisfied 3: Very satisfied	Mean = 2.43 SD = 0.74 N = 6260	Mean = 2.74 SD = 0.73 N = 6593
Political alienation (Item 3)	“In general, how satisfied are you with how democracy works in your municipality?”	0: Not at all satisfied 1: Not particularly satisfied 2: Pretty satisfied 3: Very satisfied	Mean = 2.45 SD = 0.77 N = 6230	Mean = 2.57 SD = 0.78 N = 6600

Table 2. Cont.

Item Measured	Question Wording	Coding (Answer Alternatives)	Descriptive Statistics	
			2004	2014
Political alienation (Item 4)	"Generally speaking, how much do you trust Swedish politicians?"	0: Very little 1: Little 2: A moderate amount 3: A lot	Mean = 1.95 SD = 0.73 N = 6270	Mean = 2.11 SD = 0.75 N = 6642
Live in rural area	"Where are you currently living?"	0: Urban (in a place with 10,001 to 180,000 inhabitants, in Stockholm, Göteborg, or Malmö? *) 1: Rural (In a place with less than 200 inhabitants, in a place with less than 2,000 inhabitants, in a place with 2000 to 10,000 inhabitants)	Mean = 0.78 N = 6307	Mean = 0.68 N = 6683
Rural upbringing	"Where did you, your mother, and your father spend the majority of your life before 18 years of age?"	0: Urban (In a place with 10,001 to 180,000 inhabitants, in Stockholm, Göteborg, or Malmö? *) 1: Rural (In a place with less than 200 inhabitants, in a place with less than 2,000 inhabitants, in a place with 2000 to 10,000 inhabitants)	Mean = 0.54 N = 6362	Mean = 0.62 N = 6718
Direct experience with wolves	"Have you ever seen a wild bear/wolf?" and "Have you ever seen bear/wolf tracks?"	0: No direct experience with wolves (Never) 1: Direct experience with wolves 0: (Once, more than once)	Mean = 0.32 N = 6073	Mean = 0.46 N = 6618
Political representation	"Which political party do you sympathise with the most?"	0: Not in government ("Vänsterpartiet", "Socialdemokraterna", "Miljöpartiet", "Sverigedemokraterna", "other") 1: In government ("Moderaterna", "Folkpartiet", "Centerpartiet", "Kristdemokraterna")	Mean = 0.31 N = 6362	Mean = 0.31 N = 6246

\* Stockholm, Göteborg, and Malmö are the three largest metropolitan areas in Sweden.

#### 2.4. Descriptive Statistics

The samples 2004 and 2014 differed with regards to respondent distribution. Approximately one-third of the respondents favored a decrease in the wolf policy goal (30% in 2004, 34% in 2014). In 2004, 20% of the respondents disliked wolves, while the corresponding proportion in 2014 was 25%. The gender distribution was even in both surveys with 49% female respondent in 2004, and 50% in 2014. In 2004, 35% of the respondents had a hunter in the household, compared to 30% in 2014. A higher proportion of respondents lived in rural areas in 2004 than in 2014 (78% compared to 67%), and a smaller proportion of the respondents were living in a wolf county in 2004, compared to 2014 (36% in 2004, 51% in 2014). In 2004, 55% of the survey respondents had grown up in a rural area, while the corresponding proportion in the 2014 survey was 62%. The proportion of respondents that had seen wolf tracks or a wild wolf was smaller in 2004 than in 2014 (32% compared to 46%), while the proportion of respondents supporting a party in power was approximately 25% in both surveys. The proportion of respondents with a university education increased from 24% in 2004 to 35% in 2014 (Table 2).

#### 2.5. Data Analysis

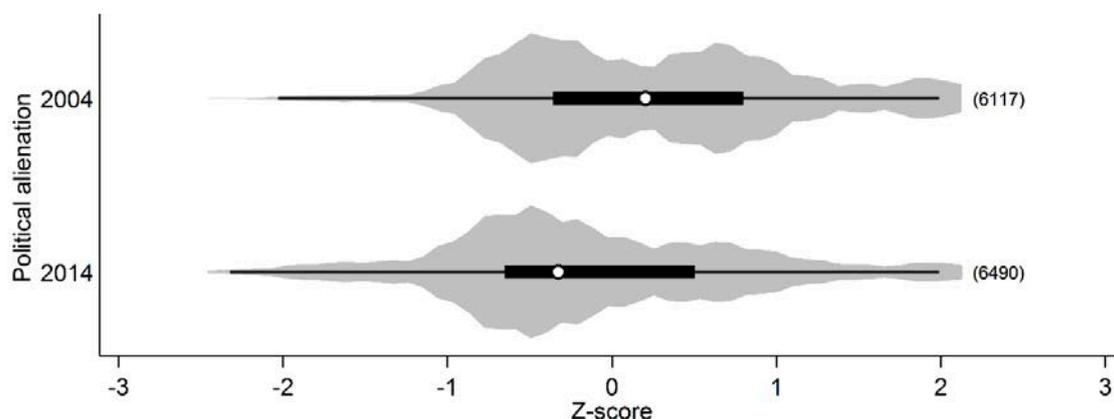
Data analyses were performed in Stata 14 (StataCorp, College Station, TX, USA). Independent variables were included based on their empirical and theoretical relevance to the concepts studied, and correlated substantially with the variables of interest (correlation table available on request). The creation of the political alienation scale was done using factor analysis. Previous studies have indicated that there is likely to be geographic clustering with respect to attitude towards the wolf policy [36], and consequently a logistic fixed effects model was used to account for possible sources of variance at the municipal level. This model was applied separately to data from 2004 and 2014, with the results presented as odds ratios. Model selection was guided by a combination of theoretical expectations and empirical analysis. Independent variables were added in a stepwise progression and model fit was assessed using BIC and Tjur's  $R^2$  [38]. Differences between rural and urban respondents were assessed using mean comparison tests, and the result was regarded as statistically significant given  $p < 0.05$ .

### 3. Results

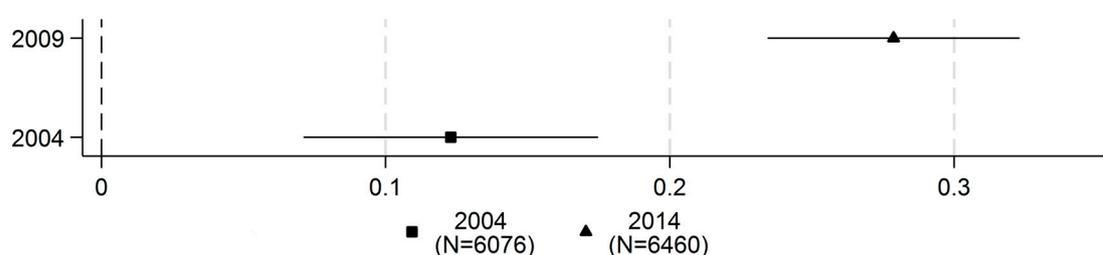
#### *Political Alienation*

The four items measuring political alienation, i.e., how satisfied the respondents are with the political system at various levels (EU, national and municipality) and to what extent they trust elected politicians (Table 2) were reverse coded and combined into a scale of political alienation using factor analysis. The items correlated highly and reflected a single underlying component ( $K > 1$ ). The overall alpha was 0.83, and alphas ranged from 0.75–0.81 when excluding single items. Factor loadings ranged from 0.55–0.80, the Bartlett test was statistically significant ( $p < 0.000$ ), and the KMO was found to be within the accepted range (0.746). This process resulted in a standardized scale of political alienation (Figure 1).

As can be seen in Figure 1, the overall political alienation was higher in the 2004 sample. However, when testing for the difference between rural and urban areas, it was revealed that political alienation was reported to be higher in rural areas (Figure 2). Thus, respondents living in rural areas felt more politically alienated than respondents living in urban areas in both 2004 and in 2014. While the difference between respondents living in rural and urban areas was less pronounced in 2004 than in 2014, both years indicated that rural areas have higher levels of political alienation than urban areas ( $p < 0.05$ , Figure 2), thus confirming P1.



**Figure 1.** The distribution of political alienation in the 2004 and 2014 surveys. The means are at  $Z = 0$ , white dots represent the median, the black bars represent the quartile range, and the gray area represents the distribution of the data.



**Figure 2.** Regression effects of living in a rural area on political alienation based on surveys from 2004 and 2014 (95% CI).

In order to test the remaining predictions, a full regression model was built. This was done by the stepwise addition of theoretically motivated variables into a null model containing only an intercept. The partial model (Table 3) was made up of all level 1 variables included in the full model (Table 4), with the exception of the dislike wolves variable. The full model is presented in detail in Table 4. Each step of this process increased model fit in terms of BIC and  $R^2$ . Additionally, the stepwise expansion also reduces the municipal sources of variance to a point where they become negligible in the full model (Table 3).

**Table 3.** Comparison of three expansion steps of the statistical model.

Statistic	Null Model		Partial Model		Full Model	
	2004	2014	2004	2014	2004	2014
BIC	4575	6065	3609	4345	2478	3192
$R^2$	NA	NA	0.177	0.203	0.489	0.479
Municipal level $\sigma^2$	0.13	0.16	0.04	0.04	0.01	0.00

Examining the full model, the data from the 2014 survey showed two significant collective level effects, while no such effects were found in the 2004 data (Table 4). Respondents living in a municipality with a higher proportion of people with a rural background were more likely to favor a restrictive wolf policy (OR = 2.13,  $p = 0.02$ ). Also, living in a municipality with a higher proportion of people that dislike wolves made respondents more likely to favor a restrictive wolf policy (OR = 4.24,  $p = 0.03$ ), if those respondents grew up in a rural area themselves. Based on the 2014 survey data, political alienation also increased the probability that an individual will favor a restrictive wolf policy (OR = 1.18,  $p < 0.01$ ). Thus, the full model supports a collective level effect with regards to rural upbringing (P2) in 2014.

The model also indicate that the dislike of wolves had no collective level effect within the samples (P3), but the 2014 sample does show an effect of disliking wolves on a collective level within the segment of the respondents that grew up in a rural area (P4).

Additionally, both surveys showed ( $p < 0.00$ ) that generally, if an individual dislikes wolves, then the individual is more likely to favor more restrictive policy options (2004 OR = 47.65, 2014 OR = 31.15). Furthermore, living in a county with a wolf presence and having a hunter in the household both had significant effects on the probability that an individual will favor a more restrictive policy in 2004 and 2014 (Table 4). In 2014, experiences with wolves (sight of tracks or animal) and supporting a party in power increased the likelihood of favoring a restrictive wolf policy, whereas a university education reduced that same probability (OR = 0.53). All three of these effects were statistically significant in 2014. Spatial variation at the municipal level was negligible, with geographic clustering not explaining more than 1% of the variation (Table 4). The pseudo  $R^2$  of the regression model was 0.489 for the 2004 data and 0.479 for the 2014 data (Table 4).

**Table 4.** Results of the Logistic model.

Change in the Probability of an Individual Favoring a Decrease in the Wolf Policy Goal		
Independent variables	2004	2014
Level 1 effects		
Dislike wolves <sup>1</sup>	47.65 *	31.15 *
Age	1.04 *	1.02 *
Female	1.09	1.01
University educated	0.98	0.53 *
Hunter in household	2.96 *	3.89 *
Political alienation	1.24	1.18 *
Support party in power	1.12	1.43 *
Live in rural area	1.21	0.9
Seen wolf or track	1.1	1.51 *
Live in wolf county	1.59 *	1.95 *
Rural upbringing	0.81	1.03
Level 2 effects		
Dislike wolves	4.39	1.15
Rural upbringing	1.24	2.13 *
Dislike wolves * Rural upbringing	2.9	4.24 *

<sup>1</sup> The strength of these odds ratios is due to the high correlation between public attitudes towards wolves and wolf policy. \*  $p < 0.05$ .

## 4. Discussion

### 4.1. Attitudes to Wolves and Policy

The aim of this article is to explain variations in public attitudes towards wolf policy. Even if these attitudes can be expected to be highly correlated with attitudes to the wolf per se [5], there is a value in examining the factors that influence attitudes to policy, as policy is a central tool used to regulate positive and negative effects of wolf restoration. The measurement of attitudes toward policy and policy change is thus also important in order to overview perceived policy legitimacy among different groups.

In general, the demographic variables included here (Table 4) have effects on attitude towards the wolf policy that are comparable to previous research relating to attitudes towards wolves cf. [1,5,33]. One notable exception is the support of the party in power, as previous research indicated that attitudes towards wolves do not correspond to the traditional left-right dimension in politics [36]. The 2014 results indicate that attitudes towards wolf policy might do so; alternatively, they might have begun to increasingly do so over time, given that center-right wing voters display a preference for a more

restricted wolf policy (Table 4). This result merits further attention, as it could be indicative of an increasing politization of the environmental issues, whereby an issue, which was previously not in line with the left-right dimension, may now have become a part of the traditional political spectrum.

#### 4.2. Direct Experience

The longitudinal design with multiple survey waves, in combination with the multi-level sampling strategy with an oversampling of rural areas, offers a unique possibility to study the impacts of direct experiences on public attitudes over time. Not only does it open up the possibility to explore the social response to environmental change but also shows how policy is able to meet this change. Given that the Swedish wolf population grew substantially during the time period studied [26,27], and that proximity to wolves [7] and direct experience with wolves [5] tend to result in lower public acceptance of wolves, the observed differences between 2004 and 2014 with respect to seen wolf or track and living in a wolf country (Table 4) are likely an indication of a waning public support of policy in response to a growing wolf population. This, in turn, indicates that growing wolf populations represent a potential threat to public acceptance of wolves, as suggested by previous research [5,13].

#### 4.3. Political Alienation and Collective Level Effects

The results presented above add to a growing body of literature that highlights the importance of considering social aspects in relation to wolf conservation efforts cf. [6,10,11,24,25]. Findings show that people living in rural areas tend to feel more politically alienated than people living in urban areas (P1, Figure 2). In addition to the direct effects of wolf proximity, a number of, mostly quantitative studies, have examined the symbolic role of the wolf as a representation of urban political oppression [11,25]. Here, the claim that disagreements over wolf policy as an issue of uneven political power is tested quantitatively, thus strengthening the findings of previous research. Given these findings, rural resistance to wolf presence is likely to be partly driven by a struggle for political autonomy in rural areas [9,14]. In addition to resisting the wolf, people in rural areas also seem to be resisting what they perceive to urban political control: in the form of the wolf policy, and this is likely to turn wolf resistance into an issue of collective rural identity [12].

The analysis shows no significant collective level effect of disliking wolves on attitudes to policy (P2). However, the 2014 data show two collective level effects that affected attitudes towards the wolf policy: the proportion of people in the municipality that grew up in a rural area (P3); and the proportion of people in the municipality that dislike wolves, which only had a significant effect on those individuals who grew up in rural areas themselves (P4). Additionally, the level of political alienation is significantly higher in rural areas than in urban areas. In the 2014 data, political alienation also had an effect on attitudes towards wolf policy (Table 4).

The above results (Table 4) show that the collective level variables do impact the attitudes of individuals in the 2014 data, and that political alienation also has a significant effect on individual level attitudes in the same data set. This suggests that political alienation could potentially function as a driver of collective level demographic patterns [26] in the case of attitudes related to wolf policy: supposedly as individuals that have given up on their ability to affect the political system on the individual level attempt to achieve change by collective organization and struggle cf. [15].

Ultimately the number of wolves in the country is likely to be the chief determiner of popular attitudes towards the wolf policy, as indicated by the effects of attitudes towards wolves on attitudes towards the wolf policy (Table 4). However, these results also show that popular attitudes towards the wolf policy are connected to political alienation in rural areas. Attitude formation in relation to wolf policy is thus likely to also be affected by how the general power relationship between urban and rural areas is perceived.

This would imply that addressing the problem of perceived political alienation among the rural population could potentially increase wolf policy acceptance: by increasing the perceived legitimacy of the policy process cf. [28,30]. Restoring faith in the political system among the rural public could

potentially lead to an increased acceptance of policy output, which, in practice, could result in reduced social conflicts over wolves and wolf policy, illegal hunting, and in general reduce discontent among rural populations cf. [28,30]. One proposed way of achieving this would be a reform of the Swedish wolf management system, as various forms of collaborative or interactive governance based management have the potential to increase procedural as well as output legitimacy [39]. However, assessing the plausibility or potential of such a reform is well beyond the scope of this paper.

## 5. Conclusions

Rural urban disagreements over wolf policy are likely to be driven by political alienation and collective level effects based around rural identity. Conflicts over wolf policy are also likely to be related to a perceived imbalance of political power, related to rural and urban groups, both in general, and in relation to the Swedish wolf policy. These findings highlights the need to study both environmental and the socio-political context in relation to conservation and management efforts, in order to ensure public support of wolf management and policy choices.

In general, it seems that addressing rural perceptions of political alienation could also be a method of mitigating social conflicts over wolf policy. The effects of political alienation on attitudes towards wolf policy suggest that reducing rural discontent with the wolf policy process as such could increase policy compliance, which can be assumed to result in increased management and policy effectiveness.

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