

Shoot shovel and sanction yourself: Self-policing as a response to wolf poaching among Swedish hunters

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Abstract Self-policing is essential for addressing wildlife-related crime where illegal activity is extremely diffuse, and limited resources are available for monitoring and enforcement. Emerging research on self-policing suggest key drivers including economics, folk traditions, and socio-political resistance. We build on this research with a case study evaluating potential drivers of self-policing illegal wolf killing among Swedish hunting teams. Swedish hunters marginally leaned toward considering illegal hunting of wolves an expression of resistance (10.30 out of a possible 17 on a resistance scale) and strongly believed outsiders had undue influence over hunting (15.79 out of a possible 21 on an influence scale). Most (73%) Swedish hunters stated they would report illegal wolf killing to authorities, but 20% stated they would handle the infractions through internal sanctions. Viewing illegal hunting of wolves as a form of political resistance, viewing wolf management as being controlled locally, and perceived prevalence of illegal wolf killing among hunting acquaintances were positive predictors of preferring internal sanctions to address illegal wolf killing over reporting the crimes. Resistance and perceived prevalence of wolf killing also predicted preferring no action to address illegal wolf killing. These results suggest that a counterpublic of marginalized ruralism may promote forms of self-policing that rely on internal censure for illegal wolf killing rather than using formal legal channels. Similarly, folk traditions within this counterpublic (e.g., perceptions of prevalence of illegal wolf killing) shape if and how internal sanctions are advocated. Re-engaging marginalized hunting groups and

emphasizing the rarity of illegal wolf killing may promote wolf conservation, both in Sweden and in other democratic regimes.

Keywords Hunting · Poaching · Power · Predators · Resistance · Social influence · Wolves

INTRODUCTION

The diffuse nature of wildlife and the relative remoteness of habitat make self-policing among hunters essential for wildlife conservation, and predator conservation in particular. Illegal killing of wolves may be the most well-known context where self-policing is essential for wildlife conservation. Wolf range is wider than that of any other large predator, and illegal killing of wolves by hunters is prevalent across the global range (Chapron and Treves 2016; Pohja-Mykrä 2016; Bashari et al. 2018). The issue is particularly important in Scandinavia (von Essen et al. 2016), where wolf poaching may account for up to half of total wolf mortality, and cryptic poaching, undetected by conventional means, may account for more than two-thirds of total poaching (Liberg et al. 2012). Wildlife conservation agencies expend significant efforts on law enforcement activities, yet hunters rarely see or interact with law enforcement officials because hunting itself is so geographically diffuse, remote, or otherwise difficult to systematically monitor (Gavin et al. 2010; Bunnefeld et al. 2013). Despite this disconnect, responses to inadequate wildlife law enforcement often center on more legislation and establishing more punitive regimes (Nurse 2011). This approach has created an anti-poaching ‘arms race’ including paramilitary ranger units and efforts to establish fleets of drones to hunt poachers, but as yet failed to address

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illegal hunting in meaningful ways (Wall and McClanahan 2015). An alternative approach to mitigation, built on the recognition that most cases of illegal hunting are witnessed only by hunters themselves, would focus on uncovering the logic to self-policing among hunters. From here, mechanisms of social control could be understood and encouraged.

Hunting teams provide fertile ground for studying self-policing of illegal wolf killing for multiple reasons. First, hunters already show a tendency to resolve—that is, police and sanction—their internal transgressions privately within hunting teams (Heberlein 1991; von Essen 2017). In this regard, their institution may be likened to a police force that is guided by an internal normative order and upholds a code of silence around some transgressions so as to protect against public criticism (Long et al. 2013). Second, hunters sometime profoundly distrust and question the intrusion of law enforcement and state regulation on their domain, and display primacy toward their cultural praxis and informal norms in place of these (Heberlein 1991; Bisi et al. 2007; Krange and Skogen 2007). Their efforts at contained policing of wildlife crime, then, may reflect a defensive shield to ward off the intrusion of legal rules (Ojalampi and Blomley 2015). Third, self-policing becomes necessary to uphold some sense of internal order. One may speculate that maintaining this internal order is part of hunters' perceived need to project responsibility and order to maintain the legitimacy and freedoms hunting enjoys in contemporary society (Hanna 2006, p. 252; Knezevic 2009). Further, the *way* one hunts is an important status marker in some rural communities (Gunn 2001). Consequently, hunters try to retain integrity in their social communities by distinguishing themselves from “slob” hunters, urban outsiders, poachers, and other lesser categories of hunters, and to do so, hunting teams need a mutually understood system of social sanctioning in place. Finally, internal sanctions may prove more powerful than external ones. For instance, in the Nordic context, fear of becoming the subject of gossip may serve as a stronger deterrent to natural resource harvesting crime than regulations themselves (Gezelius 2002).

Traditions of self-policing among hunting teams, however, may also make enforcing wolf conservation laws more difficult when internal norms support law breaking or turning a ‘blind eye’ to infractions of wildlife law. Responses to illegal hunting of wolves likely depend on whether crimes are characterized as livelihood crimes, folk crimes, or socio-political crimes (von Essen et al. 2014). Livelihood crimes are associated with economic or utilitarian motivations, and may include wolf poaching to generate money from pelts (Bashari et al. 2018), to reduce competition for game (Bisi et al. 2010), or simply in response to low value assigned to wolves (Chapron and

Treves 2016). Such utilitarian motivations may receive the least support among hunters. Wolf poaching as folk crime occurs when illegal killing fails to seriously violate public sentiments about morality (Muth and Bowe Jr 1998), can represent custom and continuity of common historical practice (Forsyth et al. 1998), and due to associations with custom and moral acceptability often goes unreported (von Essen et al. 2014). Wolf poaching as a socio-political crime may generate the strongest forms of resistance to self-policing for several reasons. This form of poaching is driven by perceived marginalization of lifestyles and livelihoods perpetuated by the regulations and outside regulators protecting wolves (von Essen et al. 2014). When illegal killing of wolves occurs as defiance against natural resource management (Kahler and Gore 2012), perpetrators would logically avoid giving those authorities more power by using traditional avenues to sanction those who violate laws. Little empirical evidence exists for evaluating these compelling explanations for how hunters may respond to illegal wolf killing, perhaps because self-policing has a self-contained nature. Nevertheless, researchers have uncovered surprisingly sophisticated mechanisms and elaborate systems of taboos and sanctions in the hunting context (Kaltenborn et al. 2013).

In this paper, we build on the nascent research exploring self-policing among hunting groups with a case study of self-policing illegal wolf harvesting among Swedish hunting teams. We test 3 quantitative hypotheses: (1) viewing hunting regulations as controlled by powerful outsiders (Influence) is positively related to ignoring illegal wolf killing and addressing it internally rather than reporting it, (2) viewing illegal hunting acts as a form of resistance (Resistance) is positively related to ignoring illegal wolf killing and addressing it internally rather than reporting it, (3) Perceived prevalence of illegal wolf killing among hunting acquaintances is positively related to ignoring illegal wolf killing and addressing it internally rather than reporting it. The first two hypotheses emerge from our interpretation of illegal killing of wolves as a form of socio-political resistance. Specifically, defiance theory suggests that illegal killing of wolves would emerge from perceptions of illegitimate external authority (Eurocentric rule making and ‘Brussels bureaucrats’ in this case), and defiance of that authority through rule breaking (Brymer 1991; Mischi 2013). Further, if illegal wolf killing is perceived through this lens of defiance, logic would dictate hunters appealing to internal authority (e.g., self-policing) or choosing to ignore illegal wolf killing. Hypothesis three emerges from our interpretation of illegal wolf killing as a folk crime. Specifically, if hunters perceive illegal killing of wolves as typical, then it would be seen as a lesser moral violation (Muth and Bowe Jr 1998), and be less likely to be reported.

BACKGROUND

With the inclusion of Sweden and Finland in the EU in 1995 and subsequent ratification of the Habitats Directive, wolf conservation became an international conservation priority in the region. The growing and protected populations of wolves began upsetting rural people in the 1990s and tensions escalated, culminating in illegal killing of wolves (Hagstedt and Korsell 2012), protests against the governance regime (von Essen et al. 2015), and the disillusionment of rural residents over suffering consequences of urban-based environmental schemes (Epp and Whitson 2001). Against a historical background of intense persecution of wolves in the Nordic countries, the EU politics represented a break in continuity and threat to the countryside in the eyes of hunters in particular (Bisi et al. 2010). Democratically mandated wolf culls intended to increase hunters' tolerance for wolves and to curb illegal killings have been proposed yearly since 2010, but in both Sweden and Finland, these initiatives were frequently counteracted by legal appeals by animal rights organizations, stern warnings from the EU Commission on the Environment, negative media coverage, and sometimes the sabotage of hunts by activists (von Essen 2016). Illegal killing of wolves has persisted in the region and is estimated to comprise a significant portion of wolf mortality, seriously hindering the conservation of wolves in Sweden (Liberg et al. 2012) and Finland (Suutarinen and Kojola 2017).

Sweden provides a good case study of the international phenomenon of hunters killing large predators of symbolic conservation interest for multiple reasons. First, in Sweden and other Nordic nations, the vast majority of hunters hunt in tight-knit social groups called hunting teams (Pellikka et al. 2007). These teams provide a context where social forces of self-policing are intuitively relevant, and hunting teams and clubs are prevalent internationally including most of the EU and the eastern portions of United States. Second, illegal killing of wolves has emerged as a global phenomenon ranging from Nordic nations to Afghanistan (Hagstedt and Korsell 2012; Bashari et al. 2018). We acknowledge, however, that despite these shared patterns in hunting teams and killing of wolves, there are many unique interest groups among hunters.

Third, the context addressed in Sweden provides fertile ground for testing hypotheses about mechanisms underlying self-policing of wildlife conservation laws. Qualitative studies suggest illegal killing of wolves may operate as a potential form of resistance against perceived overreach by urbanites and the central government into rural affairs (von Essen et al. 2015), and loss of influence within a globalized governance regime by some Swedish hunters (von Essen 2016). As with many hunting communities of EU member states, Swedish hunters' relationship with the EU is

strained and complex. Swedish hunters have argued that openness on their part to report everything from wolf inventories to legal and illegal wolf killing to the EU commission on Environment is self-defeating and punitive (von Essen, 2016). They argue that diligence and desire to be 'best in class' in terms of EU reporting would place them at a disadvantage relative to member states that adopt secrecy, an approach they label *The Italian Model*, where the EU turns a blind eye to harms to the wolf population that are not reported (von Essen et al. 2014). Qualitative research suggests Swedish hunters have begun to believe that keeping things in the dark may be more beneficial than reporting killing of wolves (von Essen et al. 2014).

Similarly, wolf poaching may operate as a folk crime when illegal killing fails to violate public sentiments about morality (Muth and Bowe Jr 1998). Folk crimes typically reflect custom and continuity of common historical practice (Forsyth et al. 1998). Following their associations with custom and moral acceptability, such crimes often go unreported (von Essen et al. 2014). Indeed, folk crime may be tacitly supported in rural communities, and this is the case for some kinds of illegal hunting (Brymer 1991). Two elements to folk crimes are relevant here. First, they are seen as motivated by common sense (White 2016), for example, to protect livestock or provide food for the pot. Second, the prevalence of folk crime often illustrates an alternative normative community order that takes precedence over external laws, along the lines of 'leave us alone, we've got our own rules.' Although folk crime may be regarded as harmless within a community, it implies decoupling of informal norms from formal law and can have cumulative impacts that threaten wildlife (Stretesky et al. 2010).

Illegal killing of wolves also includes livelihood crime elements (von Essen et al. 2014). Specifically, interest-based motivations including depredation of livestock and competition for game have been used as justification for illegal killing of wolves in Sweden (Hagstedt and Korsell 2012), Finland (Bisi et al. 2007), the United States (Muth and Bowe 1998), and Afghanistan (Bashari et al. 2018). Wolves killing or injuring hunting dogs has emerged as a high profile and emotional interest-based driver of illegal wolf killing, particularly in Sweden (Skogen and Kränge 2003; Peltola and Heikkilä 2015; Pohja-Mykrä 2016). Testing this trend highlights the potential for unique interests (e.g., well-being of hunting dogs) to shape how sub-groups of hunters approach illegal killing of wolves.

MATERIALS AND METHODS

The survey, data processing, and analysis all took place in 2016–2017, and were preceded by qualitative investigations of the illegal hunting phenomenon through semi-

structured interviews with Swedish hunters (von Essen 2016). Synthesizing the results of these interviews, we produced a questionnaire that would be both resonant with respondents and that would complement and bring statistical precision to our qualitative findings. In this way, our questionnaire benefited from contextualization afforded by our earlier qualitative studies on illegal hunting.

Sampling

We randomly selected 2014 hunters from the Swedish official database of registered hunters which includes all registered hunters and is administrated by the Swedish Environmental Protection Agency. The randomly chosen names and addresses were delivered by the Swedish Environmental Protection Agency after a formal written request by the leader of the research project and a formal IRB approval by the agency. We then mailed each hunter a paper questionnaire and a pre-stamped return envelope on May 16, 2016. Respondents were sent 2 reminders, the first one May 23, 2016 as a postcard reminder, and the second one June 6, 2016 as a letter with another paper questionnaire and pre-stamped return envelope enclosed. All mailing included a unique logon code allowing respondents to complete the questionnaire online if they preferred. Of the 2014 questionnaires, 11 were undeliverable. Of the remaining 2003 questionnaires, 957 were returned answered and 18 returned unanswered (47.5% response rate).

Instrument development

The questionnaire used in this study is available in online supporting information (Appendix S1). We conducted two rounds of pretesting to improve validity of all questionnaire items. First, we completed interviews with officials of the two primary Swedish hunters' associations (Svenska Jägareförbundet and Jägarnas Riksförbund). In these interviews, we gathered general feedback and suggestions for improvement in item wording and clarity (e.g., what does this question make you think of?). Second, we asked 33 Swedish hunters selected primarily from Uppland to participate in a pilot survey, and 17 participated. We asked our pilot respondents to circle questions that were difficult to understand and make notes about how to make improvements before returning the questionnaires to us. Within one week of this exercise, we interviewed each respondent via telephone about the clarity, terminology, and layout used in the questionnaire.

We developed a 4 question scale to address perceiving hunting as a form of resistance (hereafter Resistance; Table 1), and a 5 question scale to measure perceptions of outsider influence over governance among hunters (hereafter Influence; Table 2). We coded individual items from

strongly agree = 5 to strongly disagree = 1 to make interpreting scale results more intuitive. Scores on the Resistance scale could range from 4 to 20, and scores on the Influence scale could range from 5 to 25. In addition to the qualitative pretesting of the scales, we tested each for reliability and validity. We used Cronbach's alpha to measure internal reliability, or the degree to which items within the scale measure the same construct (Gliem and Gliem 2003). In general, alpha scores reaching 0.7 and above are considered acceptable, 0.8 and above considered good, and 0.9 and above are excellent (Gliem and Gliem 2003). We completed a post hoc principal confirmatory analysis (PCA) for each scale. Factor analyses for the climate change hope and behavior scales were exploratory as these scales were developed for this study. We used the rule of thumb of eigenvalues greater than 1 to determine the number of factors for each of these scales (Williams et al. 2010).

To assess prevalence of illegal predator hunting among networks of each hunter we asked, "How many of your hunting acquaintances are you aware of having deliberately participated in illegal hunting of predators in the 2014–2015 hunting season?" Answer options ranged from none, to 1 of 10, 2 of 10, 3 of 10, to all. This approach avoided pitfalls associated with requesting artificial specificity or calculations, but could be improved in future research by refining categories less than 1 of 10. This limitation may encourage respondents to either under represent (i.e., choose 0) or over represent (i.e., choose 1 of 10) the prevalence of illegal predator killing when they know less than one in 10 acquaintances who engage in the behavior.

We also collected data for several control variables used to avoid identifying spurious results associated with our three hypotheses. The control variables were education level, home city size, age, residence in wolf counties, importance of dogs for hunting, days hunting in the previous year, and years of previous hunting experience. We included education level and the population level of the community where hunters were raised because they may relate to Influence or Resistance. Education level was measured by asking respondents for their highest education level, and options ranged from "primary school" to "university or college for 3 years or more." Population of their home community was measured by asking "In what type of area do you live," with answers ranging from "In an area with less than 200 inhabitants" to "In an area with more than 300,000 inhabitants." We created a binary variable for whether each hunter resided in a wolf county, which was defined by the 5 counties in Sweden where wolf populations are most dense (Värmlands län, Dalarnas län, Örebro län, Gävleborgs län, Västmanlands län) (Naturvårdsverket 2017). We included a question about the importance of

Table 1 Item factor loadings for illegal hunting as resistance scale ($n = 930$, $\alpha = 0.85$)

Why do you think some deliberately break hunting legislation? What do you think about the following motives:	Mean	SD	Factor loading
Because hunters do not feel they have enough of a say on legislation	3.27	1.05	0.85
People do not have confidence in those who make decisions on hunting legislation	3.45	1.06	0.90
People do not think that the hunting legislation is fair according to our knowledge about wildlife	3.41	1.01	0.84
People act in a kind of protest against authorities	3.13	1.08	0.71

Each item coded with (1) strongly disagree to (5) strongly agree

Table 2 Item factor loadings for outsider influence over hunting matters scale ($n = 930$, $\alpha = 0.74$)

How high an influence do you consider the following actors have on hunting matters in Sweden today?	Mean	SD	Factor loading
County Administrative Boards	4.15	0.80	0.60
European Union	4.04	1.01	0.79
Wildlife Delegations ^a	2.45	0.83	0.52
Swedish Environmental Protection Agency	4.14	0.85	0.39
Parliament (Swedish)	3.80	1.02	0.78

Each item coded with (1) very low influence to (5) very high influence

^aWildlife delegations are the only local institution in the scale, and thus score below neutral (3)

hunting with dogs because wolves killing hunting dogs has emerged as a high profile and emotional issue linked to wolf management in Sweden (Skogen and Krange 2003; Peltola and Heikkilä 2015; Pohja-Mykrä 2016). We measured the importance of dogs by asking respondents the degree to which they agreed (5-point scale ranging from absolutely agree to do not agree at all) with the statement “I hunt so I can work/train with my dog.” We included days hunted in the previous year, because it serves as a reasonable metric of dedication to hunting (Hansen et al. 2012), which may in turn impact preferred responses to illegal wolf killing by a hunting team member. Finally, we included previous years of hunting experience because the variable intuitively related to the degree of socialization a hunter would have within the hunting community, and thus the degree to which the hunter would adhere to group norms.

Analysis

We used multinomial regression to model how the Resistance and Influence scales and reported prevalence of illegal predator killing among hunting acquaintances predicted whether hunters would choose to take no action or self-police instances of illegal wolf killing within their hunting team rather than report infractions to law enforcement. We included six other variables primarily to control for their effects: age, educational attainment, urban background, days hunting in the previous year, importance placed on hunting with dogs, and whether they resided in a

county designated as a wolf area. We treated reporting illegal activities as the default category against which the other two were compared because it was the only lawful response to illegal killing of wolves, and the other two responses were choices made by hunters to disregard that legal constraint. Sample size was sufficient for 8 variables and they were not collinear. All analyses were conducted using JMP 13.

We used two methods to evaluate the degree to which our respondents reflected the larger sample, and the population of Swedish hunters. First, we used a continuum of resistance approach (Kypri et al. 2004), wherein late respondents are assumed more similar to nonrespondents than are early respondents on the continuum of resistance. We divided respondents into early responses (after the first email; $n = 210$), intermediate responses (after the first reminder and before the third reminder; $n = 418$), and late responses (after the third reminder; $n = 139$), and compared the group responses for all variables used in this study using ordinal regression models. No variables were significantly different between waves (age, $p = 0.212$; educational attainment, $p = 0.657$; urban background, $p = 0.708$; days hunting in the previous year, $p = 0.676$; importance placed on hunting with dogs, $p = 0.258$; whether they resided in a county designated as a wolf area, $p = 0.887$; resistance scale, 0.557; influence scale, 0.958, reported prevalence of illegal predator killing, $p = 0.605$). Second, we compared age between hunters from our sample (mean age = 56.72, SE = 0.49) and the population of Swedish hunters with licenses during the year of the

survey (mean age = 52.68, SE = 0.01, $n = 257,397$; from the Swedish Environmental Protection Agency database of all registered hunters). The sample had higher average age than the population, but we did not weigh data by age as the variable was not significant in any models.

RESULTS

Most hunters (73%, $n = 684$) stated they would respond to illegal wolf killing by a hunting team member by reporting it to officials, but 6% ($n = 58$) stated nothing would be done, and 20% ($n = 191$) stated they would handle it internally. Average scores on the resistance (10.30 out of a possible 17, SD = 3.48) and influence scales (15.79 out of a possible 21, SD = 3.10) suggested Swedish hunters marginally leaned toward considering illegal hunting an expression of resistance and strongly believed outsiders had influence over hunting. Responses to individual items within each scale supported this trend (Tables 1 and 2). Cronbach's alpha measurements indicated good reliability for the Resistance scale ($\alpha = 0.85$), and acceptable reliability for the Influence scale ($\alpha = 0.74$). The PCA results confirmed single-factor scales with eigenvalues for the second factor in the resistance scale (0.61) and Influence scale (0.77) both < 1 . Each item in the Resistance scale had a factor loading of 0.71 or greater (Table 1), which is high (Gliem and Gliem 2003). On the Influence scale, we found support for one factor, with all items with factor loadings above 0.39, around the accepted lower bound for social science research of 0.4 (Table 2).

The multinomial regression model identified several predictors for how hunters believed they would address illegal killing of wolves within their hunting team. Both the Resistance scale and perceived prevalence of wolf killing among hunting acquaintances positively predicted believing no action would be needed to address illegal wolf killing within a hunting team (Table 3). Hunters who stated they would ignore illegal wolf killing in their team or address it internally had higher scores on the resistance scale (mean = 11.84, SE = 0.457 and mean = 11.19, SE = 0.250, respectively) than hunters who stated they would report the activity to authorities (mean = 9.97, SE = 0.131). Perceived prevalence of wolf killing among hunting acquaintances was almost 5 times lower among hunters who stated they would report illegal wolf killing within their hunting team (mean = 0.054, SE = 0.034) than among hunters who stated they would ignore it (mean = 0.241, SE = 0.062). Education level, however, was negatively related to believing no action would be needed to address illegal wolf killing within a hunting team (Table 3). We did not detect effects from influence, annual days hunting, home city size, age, importance of spending time

hunting with dogs, or whether the hunter resided in a county designated as wolf territory.

Predictors of choosing internal sanctions rather than reporting illegal wolf killing within a hunting team were similar to the no action results, but included the Influence scale (Table 3). Whereas Resistance was positively related to choosing both alternatives to reporting illegal wolf killing, Influence was negatively related to choosing internal sanctions over reporting illegal wolf killing within a hunting team. Hunters who stated they would address illegal wolf killing in their team internally had lower scores on the Influence scale (mean = 15.41, SE = 0.270) than hunters who stated they would report the activity to authorities (mean = 15.92, SE = 0.139). Perceived prevalence of wolf killing among hunting acquaintances was 5 times lower among hunters who stated they would report illegal wolf killing by a member of their hunting team (mean = 0.054, SE = 0.034) than among hunters who stated they would address it internally (mean = 0.257, SE = 0.034). We did not detect effects from hunter education level, annual days hunting, home city size, age, the importance of hunting with dogs, or whether the hunter resided in a county designated as wolf territory. The importance of hunting with dogs, however, was the only variable in the model with marginal significance (Table 3) and was slightly higher among hunters preferring internal sanctions (mean = 2.921, SE = 127) than among hunters preferring to report illegal wolf killing by a member of their hunting team (mean = 2.747, SE = 0.066).

DISCUSSION

Our results suggest there may be two parallel forms of resistance to wolf conservation regulations among Swedish hunters, a more radical form among hunters who view wolf killing as overt resistance against outsiders, and another explained by everyday resistance among subalterns (i.e., hunters outside dominant wildlife governance power structures). In terms of the former, our results support hypothesis 2 and suggest Swedish hunters who see illegal wolf killing as defiance of inappropriate external authority (in this case, Eurocentric rule making) are more likely to condone both ignoring illegal wolf killing or using internal sanctions to address it rather than reporting violators (Brymer 1991; Mischi 2013). Our finding that higher education level predicts a tendency among Swedish hunters to prefer reporting illegal wolf killing rather than ignoring it or using internal sanctions to address it, highlights the need for research addressing the link between education and radicalization in the context of wildlife crime. Radicalization literature has not focused extensively on the impacts of education, and largely discounts the role of

Table 3 Multinomial regression model predicting whether hunters believed no action would be needed to address illegal wolf killing or internal sanctions would be needed to address illegal wolf killing as alternatives to reporting it to law enforcement officials

Variable	Coefficient	SE	Chi square	<i>p</i> value
Choosing no action versus reporting to officials				
Influence	− 0.067	0.0582	1.32	0.2511
Resistance	0.147	0.0614	5.74	0.0166*
Education	− 0.310	0.1534	4.08	0.0434*
Home city size	− 0.101	0.1138	0.93	0.3343
Age	− 0.042	0.0250	2.76	0.0964
Residence in wolf county	− 0.080	0.2260	0.13	0.7233
Dog	0.138	0.1237	1.25	0.2639
Days hunting last year	0.005	0.0049	0.97	0.3259
Reported prevalence of illegal predator killing among hunting acquaintances last year	0.663	0.2942	5.08	0.0241*
Years of hunting experience	0.038	0.0217	3.00	0.0834
Choosing internal sanctions versus reporting to officials				
Influence	− 0.084	0.0366	5.24	0.0221*
Resistance	0.136	0.0377	12.93	0.0003*
Education	− 0.193	0.0877	4.84	0.0278*
Home city size	− 0.115	0.0652	3.11	0.0778
Age	0.010	0.0135	0.05	0.4634
Residence in wolf county	− 0.020	0.1441	0.02	0.8885
Dog	0.141	0.0763	3.40	0.0650
Days hunting last year	0.003	0.0035	1.12	0.2909
Reported prevalence of illegal predator killing among hunting acquaintances last year	0.817	0.2204	13.76	0.0002*
Years of hunting experience	− 0.009	0.0116	0.66	0.4168

Results are presented with coefficients, and Chi square derived *p* values

education level, versus type, on radicalization (Pels and de Ruyter 2012), but lack of education may render individuals more isolated from divergent ideas and cultures and thus vulnerable to radicalization inasmuch as radicalization is understood as departing from law. The latter possibility remains poorly understood, but higher education institutions could play an important role in countering radicalization (Wille 2017).

Our finding that Swedish hunters who viewed hunting regulations as driven by outside influences would be more likely to report hunting team members involved in illegal wolf killing than use internal sanctions countered our first hypotheses, and surprised us. In hindsight, however, this result may reflect a mundane form of everyday resistance (Scott 2008) rather than acquiescence to external EU authority over wolf management policy. Specifically, when faced with a similar choice related to ignoring versus reporting the crime we found no effect. Therefore, viewing themselves as relatively powerless only predicted following the law, when doing otherwise (i.e., using internal sanctions) would create tangible complicity in law breaking. Thus, not being eager to report the crime, but choosing to do so rather than conduct a potentially risky internal

sanction process, may reflect the classic expressions of Scott's (2008) everyday resistance such as foot-dragging and feigning ignorance.

Relatively strong relationships between perceived prevalence of illegal wolf killing and preference for internal sanctions or not addressing the crime supports the hypotheses that folk crime status for wolf killing may hinder wolf conservation efforts. Specifically, Swedish hunters who perceived illegal killing of wolves as typical, likely saw the activity as a lesser moral violation, a tendency characteristic of folk crimes (Muth and Bowe Jr 1998). This finding highlights a potential opportunity for wolf conservation inherent to tangled descriptive and injunctive norms. Descriptive norms describe cues to acceptable behavior defined by what is typically done by others, whereas injunctive norms refer to similar cues defined by what behaviors community members approve or disapprove of (Cialdini and Trost 1998). Efforts to communicate both the rarity of illegal wolf killing in Sweden as a descriptive norm proscribing the activity [approximately 300,000 Swedes hunt, but only 5–23 wolves are poached annually (Liberg et al. 2012)], and highlighting low support for the activity based on high percent of hunters who would

report the activity to authorities, demonstrated in this study, may provide a good strategy for engaging the small sub-set of Swedish hunters who support illegal killing of wolves.

High support for using internal sanctions, versus legal channels, to address illegal killing of wolves may reflect distrust on the part of hunters toward law enforcement and the judicial system or a tendency to avoid damaging relationships within hunting teams. Many hunters are concerned with police overreactions when the victim is a wolf, prompting “CIA style crime scene” investigations that subject suspects of unduly harsh and “Eastern German style” police processing (von Essen 2016, p. 153). An experience of disproportionately high penalties for wolf killings (Hiedanpää et al. 2016), including the confiscation of one’s hunting rifles for the duration of the often lengthy proceedings, deters many hunters from using legal channels. This was described by a hunting respondent as a predilection toward “hiding the wolf in the bushes” (p. 288) rather than inviting the lengthy, unfair, and distrusted legal processes associated with invoking paragraph 28—the self-defense or defense of property caveat to wolf kills (von Essen 2016). Thus, concerns about stigmatizing the accused prior to conviction and stigmatizing the hunting community in the public eye regardless of convictions make internal sanctions more appealing, even when hunters condemn the crime of wolf killing. Hunters report experiencing a diligent societal monitoring of their conduct at all times, but particularly in relation to charismatic large carnivores. This may be why, for example, hunting teams hide participant names even during legal culls of wolves, for fear of public reprisal or personal harassment (von Essen and Allen 2017). Resolving such matters internally, then, becomes a practical form of self-preservation with direct (protecting the identity of wolf shooters) and indirect (protecting the image of hunting in society) benefits for hunters. Against previous findings that hunters carefully negotiate their social legitimacy in society today (Peterson 2004; Hanna 2006), the potential impact of law enforcement publicizing the death of wolves that are seen as a much-cherished species for urban residents (Ojalampi and Blomley 2015; Holmes 2016) and flagship of modern conservation—may be a profound blow to the continued survival of hunters.

Our finding regarding hunters motivated by spending time with their dogs choosing internal sanctions over reporting illegal wolf killing may reflect wolves, unlike some other large carnivores, attacking and killing hunting dogs for largely territorial reasons. Scandinavian hunters have a long and cherished history of loose dog hunting, sometimes regarding cooperation with the dog as “more important and rewarding than the actual kill” (Skogen and Kränge 2003, p 316). Dogs are hunting partners and family members to Swedish hunters. The loss of a hunting dog

while hunting in the forest is lamentable and has forced hunters to call off hunts, take them elsewhere, or abandon dog hunting altogether (Bisi et al. 2007), but the emergence of suburban wolves that do not shy away from human communities—with attacks on unleashed dogs in people’s gardens has been particularly difficult to adapt to (Hiedanpää et al. 2016). Recent numbers in Finland indicate that almost half of wolf attacks on dogs (45%) now happen on house yards rather than in the forest (Peltola and Heikkilä 2015). This is theorized to breed hatred toward wolves and resentment toward the public institutions that govern their protection: it is reasonable to hate a wolf that has killed your dog (Peltola and Heikkilä 2015, p. 719). From this perspective, the attachment Swedish hunters have toward dogs as both family members and as hunting partners may plausibly condition higher acceptance of wolf kills and, hence, unwillingness to report these crimes to the authorities.

CONCLUSIONS

Although this study provides management and policy insights most directly relevant to global challenges associated with conserving wolves, it also provides insights for other species of symbolic conservation interest, particularly large predators. First, our results suggest self-policing may be a surprisingly important, yet poorly understood element of predator conservation, one presenting both a problematic alternative to lawful enforcement and a useful tool to leverage enforcement through peer pressure. Second, efforts to encourage reporting illegal predator killing to authorities may need a two-pronged approach. When poaching is viewed as political resistance, a shift from no action to official reporting is needed. Conversely, when hunters believe outside forces dominate governance, outreach efforts should focus on reducing passive resistance. The former approach would likely require re-engaging marginalized groups through social practices that may include traditional governance venues, whereas the latter approach would benefit from developing and deploying governance venues where local hunters are explicitly welcomed and empowered. Thirdly, the resistance and outsider influence scales developed in this study may provide useful tools for assessing the degree to which hunters view poaching through each lens. Finally, our findings have implications for how hunters negotiate their representation to the outside world on a global scale. Patterns in ignoring or self-policing crimes identified at the national level in this study may occur in numerous other locations despite unique hunting sub-cultures, because multinational actors such as the EU and associated grand

narratives of conservation often conflict with interests and identities of rural and hunting sub-cultures (Linnell 2013).

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