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Research article

Hunting for volunteers: Toward understanding embedded motivations for citizen science contributions among Norwegian hunters in the case of wild boar

Erica von Essen^{a,*}, Henriette Wathne Gelink^a, Helene Figari^b, Olve Krange^b^a Inland Norway University of Applied Sciences, Faculty of Applied Ecology, Agricultural Sciences and Biotechnology Department of Forestry and Wildlife Management, Postboks 400 Vestad, 2418, Elverum, Norway^b Norwegian Institute for Nature Research, Sognsveien 68 NO, 0855, Oslo, Norway

A B S T R A C T

Governments increasingly appeal to citizens contribute to common goals in natural resource management, nature conservation or invasive species eradication. The contributing citizen is sometimes understood as able to graduate from being extrinsically motivated – by rewards, financial incentives or penalties – toward becoming intrinsically motivated. In this paper, we problematize the relative willingness of citizen contributions to aid the state in invasive species management, using the wild boar in Norway as a case study. Through a qualitative study using interviews, document analysis and participant observation with hunters, officials, landowners, farmers and veterinarians, We show how the relationship between the state and its citizens can make or break collaboration. Our research suggests that rewards and financial incentives by the government are not a given for contribution. Instead, citizens willingness rests on ongoing communication with the government, its perceived gratitude and feedback to their contributions, the legacy of past collaborations and various sociopolitical factors about the role of hunters in aiding the state. In this way, our study demonstrates that motivations are not static individual properties, able to be predicted with models, but complex products of hunter identities in relation to the state and wildlife, and continuous evaluations of how the state nudges its citizens. In brief, we argue that even intrinsic motivations are *embedded* motivations in a sociopolitical context.

1. Introduction

Between 2018 and 2023, Norway's wild boar management plans operated with the noncommittal aim of having boar in the "lowest possible populations in the fewest possible areas" (miljø and Thurffjell, 2018). Following detection of African Swine Fever (ASF) in Sweden in September 2023, this aim was revised to plan for the complete eradication of wild boars in the country. In taking a stance against wild boars, Norway approximates a risk-averse "biosecurity-oriented approach" concerned keeping infectious wildlife diseases like ASF and zoonoses at bay (Brown and Nading, 2019: 11).

To achieve this, the government harnesses both professional and civilian resources for the monitoring and management—the de facto eradication—of the some 400–1200 wild boar presently in the country. Outsourcing labor to citizens and local organizations, in this case ordinary hunters, enables authorities to manage wildlife remotely (Bowker and Star, 2000; Boonman-Berson et al., 2018). In the 2024 management plan, the state champions this arrangement as cost-effective: "... requiring less organisation and fewer resources". Activating hunters is

also a matter of appealing to hunters' sense of stewardship over their environment, a strong identity among hunters in Scandinavia (Kaltenborn et al., 2013). Nevertheless, hunters are not always easy collaborators. To get hunters onboard in a way that honors their competence as stewards, without taking their aid for granted (von Essen and Tickle, 2020; Emond et al., 2021), the government needs to carefully consider how to appeal and *motivate* the citizen body, notably hunters, to 'do their part' against the boars.

Despite a plethora of research on drivers for participatory monitoring and management in recent years, the motivational pathways for participating in citizen-based monitoring are poorly understood (Maund et al., 2020). Studies are frequently limited to analysis on psychological-individual levels, examining so called "autonomous motivations" (de Caro and Stokes, 2008). Models for understanding motivations also both presuppose citizens operating in sociopolitical vacuums, able to be motivated by a universal language of financial incentives. We argue that when the state compels citizens into carrying out important societal jobs, the *relationship* between authorities and civilians, the trust that civilian have in state authorities, the legacy of past

* Corresponding author.

E-mail addresses: erica.von.essen@su.se (E. von Essen), henriette.gelink@inn.no (H.W. Gelink), Helene.Figari@nina.no (H. Figari), Olve.Krange@nina.no (O. Krange).<https://doi.org/10.1016/j.jenvman.2024.123659>

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cooperation, and the sorts of signals that the state sends through framing the labor (who it is for, why it is needed, and how it is valued), are imperative in determining their cooperation—in producing ‘motivation’. Hence, we argue, that to understand what drives Norwegian hunters to participate or choose not to participate in the state’s war on boars, research is needed that decenters the individual and focus on the signals sent out by the state or commissioning body, and how these are received and internalized by citizens. In short, we seek to *re-embed* motivations in their sociopolitical and cultural contexts.

In what follows, we unpack the motivations of civilian hunters in Norway participating in state-led monitoring and management of wild boar, by understanding them as conflicted stewards with diverse objectives for their hunting activities and varying levels of trust in central authorities. We show how not everyone agrees with wild boar eradication, and how some hunters feel that the government has sent mixed or problematic signals over wildlife policy in recent years.

We proceed as follows. First, our study presents the mobilization of scientific, managerial and civilian infrastructure to control wild boar in Norway. Thus, we first interrogate the who, what, where, how and why’s of boar monitoring and its centralizing and decentralizing features. We then outline species monitoring as a practice, which involves unpacking emerging participatory practices for surveilling wildlife. A method section presents our data collection and synthesis in the research project *Pig non Grata*. Following this, and drawing from semi-structured interviews with hunters, landowners in boar affected areas, managers, veterinarians and policy-makers, as well as secondary sources from policy and management plans in Norway, we construct a picture of wild boar monitoring from the perspective of both those who commission it and those who are expected to undertake it. In a findings section, we present reflections from our interviews on monitoring and management practices, including signaling or ‘nudging’ from the government to citizens about their responsibilities, and motivations stemming from civic duty and emerging ideas of biosecurity citizenship to monitor invasive alien species (Pawson et al., 2020).

Our study is undertaken through an analytic of biopolitics and biopolitical governance, the ruling of unruly life, in which responsibility is increasingly decentralized and delegated among various actors in society with differing degrees of independence and control (Biermann and Anderson, 2017; Braverman, 2015). In our case, wild boar politics is *necropolitics*, their monitoring and management largely involving reducing their numbers (von Essen et al., 2023). By *necropolitics* (Mbembé and Meintjes, 2003) is meant the control of life in the form of mandating death, culling, or letting die. *Necropolitics* may be said to be the flip side of biopolitics, also involving control of life, such as in the wildlife management and conservation context (Braverman, 2015). In a concluding discussion, we critically consider the pathways in which the government nudges civilians to partake in their monitoring and management programs and how effective these might be.

2. Method

This study is based on a four-year interdisciplinary research project that seeks to understand how Norway prepares for (and against) the wild boar in its country. A central line of inquiry was how different societal actors viewed the new species, their experience with it, or featured into any conflicts regarding wild boar. An open-ended examination canvassing any actor that was defined as having some sort of stake in the wild boar issue, or relationship to the species, led into conducting 38 semi-structured interviews, with 1–3 informants in each interview (44 informants in total), on which the data in the following paper are drawn. The division of interest groups in this sample were 21 hunters and 17 non-hunters.

Informants were solicited through a mixed purposive sampling strategy that involved (1) maximal variation – in terms of engaging the most enthusiastic hunters to animal rights activists, (2) expert sampling – in terms of interviewing researchers who were employed by both

universities and public and agencies and who were consulted in working out wild boar management reports. (3) and snowball sampling – in terms of each informant leading us to more relevant persons. The interviews were conducted both in person and on online video. 14 featured multiple informants and/or interviewers from the project team, and thus had more focus group like dynamics. Informants (I) were encouraged to reflect both personally and in their capacity as representatives of an association, authority or affiliation, where appropriate. Interviews were conducted at a time of Norwegian boar policy going from ‘fewest possible’ to total eradication, which enabled later informants to also reflect on how the decision had been rolled out. All in all, 27 interviews (corresponding up to I23) were performed before this policy change, and 11 after (I23–40), making this a somewhat even distribution. Table #1 provides an overview of the informant selection.

For the most part, informants were enthusiastic to talk to us, particularly hunters, several of whom viewed wild boar positively or as an interesting new part of the Norwegian fauna (before it formally became subject for eradication). In a few instances, we struggled to reach officials and civil servants and when these were interviewed, sometimes relied quite carefully on the wording in official documents rather than reflect more candidly. As for the informants recruited through snowballing, this approach inherently introduces an element of self-selection into the process, thereby limiting the researchers control over the specific individuals to be included. In our study, this resulted in a male-dominated selection of informants (36 men and 7 women), particularly among the hunters. This may have influenced the range of perspectives captured in our study. Although our interviews with women did not reveal distinctly unique viewpoints or divergent perspectives, the underrepresentation of women prevents us from conclusively determining whether their viewpoints differ from those of men.

In addition to interviews, we undertook a content analysis of government reports, white papers, risk assessments, management plans, and attended public hearings and meetings pertaining to wild boar policy. For the content analysis, all official documents pertaining to wild boar were reviewed chronologically. These documents all build on one another, hence were reviewed in this sequence. As the policy documents typically referred to legislation, this formed the next set of documents to be examined, also chronologically from oldest to most recent, e.g. the Nature Management Act (2009) replaced the 1970 nature protection act. Following Dalglish et al. (2020), the analysis of the documents’ content was carried out in accordance with the READ approach (ready materials, extract data, analyze data, distil findings). The document analysis took place concurrently and iteratively with the interview study. We contacted several authors of these documents and interviewed them, both about the wording in the policy and in their capacity as private people. Some reflected on issues in the documents, or pointed us to further documents. Hence, the content analysis served a valuable source for a top-down perspective on wild boar management, where interviews supplemented how these policies were enacted and perceived on the ground. All documents were reviewed broadly with the inquiry of how alien invasive species and wild boar are managed in Norway, and we subsequently focused on surveillance and citizen participation themes for this study.

Participant observation was also carried out at the latter settings by two of the authors, which afforded a better understanding of how citizens interacted with government directly. Interviews were transcribed and coded by the first author in NVivo across 28 codes. A majority of reflections across these 28 codes focused in some way on the incentive schemes, intrinsic motivations, a sense of duty, and how the government could compel its citizens to help. We merged these findings with adjacent themes containing opinions and experiences related to collaborating with authorities, including issues of trust and reward. In this sense, our methodology became incrementally deductive with time, focusing on the premise that motivations to contribute to wild boar management and monitoring were also a function of citizen-state relations. With this purposive coding approach, themes and statements

from the findings thus do not necessarily always reflect the most statistically occurring, but the most salient and relevant from a perspective of trust and state relations in wildlife management. For this reason, a couple of informants are also overrepresented in the sample below, in terms of having more to say on this issue than others. When we provide quotations from our respondents that support a certain view, they are examples from that individual, and not spoken on behalf of an entire sample of e.g. hunters or landowners.

3. Motivations to participate in species monitoring

3.1. Participatory monitoring

Species monitoring enables managers, scientists and conservationists to gather essential data to make informed decisions about species protection and management. It is heralded as a cost-effective, transparent and democratic approach that can extend the eyes and ears of managers and scientists (Gabrys, 2016; Marcenò et al., 2021). While concerns about data quality, commitment and selective reporting persist about civilian monitoring, many countries now integrate hunters and wildlife enthusiasts in everything from endangered species monitoring to threat assessments in detecting invasive alien species (Young et al., 2022). In neoliberal conservation or wildlife management more generally, actions are outsourced from state to private actors in various constellations, typically with economic logics: market-based mechanisms, the commodification of nature and permit-based trading (Duffy, 2015). While concerns have been voiced that this turn takes away access and power from local communities, the parallel development of enlisting citizens' help – with or without compensation in various partnerships – also gestures toward a potential empowerment of individuals and the reduction of the role of the state (Sullivan, 2006).

Whenever possible, monitoring is integrated with civilians' extant practices. In other cases, hunters for example may be asked to send in biological samples to authorities on a felled animal for testing and (sometimes) receive monetary compensation. Participatory epidemiology and participatory disease surveillance are now used to monitor the health of wildlife populations, also often undertaken by hunters (Tomaselli et al., 2018). Motivating hunters to partake in such surveillance at meaningful levels can be challenging, particularly if they disagree with the goals surrounding the management – such as cherishing a species that is to be reported as invasive, or disliking a predator species that is to be monitored for conservation purposes (Cerri et al., 2016).

3.2. What motivates people?

So far, research has almost overwhelmingly explained motivations for monitoring in sociopsychological and behavioral economics inspired terms and models, drawing from social cognition, rational choice, norm activation, self-determination theory and the theory of planned behavior. In this suite of approaches, frequent in the fields of *Human Dimensions of Wildlife*, *Conservation Biology* and natural resource management studies, researchers have sought to instrumentally determine factors influencing citizens' participation and categorize them in terms of e.g. extrinsic or intrinsic motivation. These studies have suggested motivations like autonomy, self-realization, community, social capital and knowledge acquisition, and asked the extent to which different monitoring programs have helped individuals realize these goals and values (DeCaro et al., 2017; de Caro and Stokes, 2008; Johansson et al., 2022; Ostermann-Miyashita et al., 2021).

A seemingly desired trajectory for managers is in having individuals going from extrinsically motivated to intrinsically motivated, saving the state time and resources if they can be made to do it out of civic duty (Smith et al., 2023). A state of 'amotivation' is suggested to be associated with the absence of intrinsic motivations together with disillusionment over the outcome of external rewards for one's extrinsically motivated

actions (Ryan and Deci, 2019). In amotivation, individuals may feel that they are being jerked around or controlled by whosoever issues the external rewards, resulting in lack of commitment (Banerjee and Halder, 2021). Moreover, the division between extrinsic and intrinsic motivations is beginning to be debated in social psychology (Locke and Schattke, 2019). Can a motivation truly be entirely intrinsic, or is it always formed in a collective context? Such critical questions inserted into motivations research are important insofar as they begin to shift the onus from the individual to, among other things, the *relationship* between the individual and the authority. In other words, they focus on the communication between the parties such that, for example, how the authority signals directions on the one hand, and gratitude and responsiveness over behaviors on the other hand, must be seen as affecting motivations and willingness to act.

If we shift the onus from citizens to state, the latter can nudge its citizens in various ways—through financial rewards, through appealing to citizens' sense of duty, through inventing games and social rewards as a way to promote participation, and not least through legislation and compliance. But the efficacy of this pathway, some suggest, is contingent on the relative legitimacy of law and law-making institutions in the eyes of hunters, who sometimes demand autonomy and adhere to "our own rules guide us" maxims, and are sceptical of outside legal interference (Enticott, 2011; Brymer, 1991). Signalling to get citizens to change behavior can also be done through information campaigns and instructions. The research is divided as to whether people will behave in the 'correct', desired way simply if you educate them. This may be a particularly problematic approach to compel hunters into action, as they sometimes see themselves as more knowledgeable than outside authorities when it comes to wildlife (von Essen and Allen, 2017).

Finally, as contended, the state can encourage certain actions by subsidizing them or using financial incentives/rewards for undertaking them. In the wildlife management and conservation context, the latter pathway for motivating civilian interventions has historically often been by placing a bounty on the wild species in question. In the global north, use of the bounty is increasingly taboo, implying a utilitarian, dominating and commodified way of relating to wildlife. It is said to turn the value of a target species into 'dead value' or 'eradication value' (Saha, 2021). Hence, the bounty signals values not so much about the species under bounty, but about that which is to be protected.

4. Overview of the surveillance apparatus: participatory necropolitics

Although wild boar existed in Norway from around 7500 BCE to 1000 CE, the current wild boar population in Norway originate from escaped wild boar facilities in Sweden who migrated to Norway after year 1800 (Rosvold and Andersen, 2008; Rosvold et al., 2010). As Norway does not consider wild boar as native to Sweden, they are categorised as an invasive alien species, and risk assessed by —*Artsdatabanken* (Norwegian Biodiversity Information Centre). As a ratifier of the Bern convention, Norway has a binding agreement to protect threatened species, conserve native species, and prevent introduction and spread of invasive alien species. Citizen-led organizations can apply for funding to prevent further spread of alien species (Miljødirektoratet and Mattilsynet, 2022). This is alongside of civilian activities, for which The Norwegian Environmental Agency has created several guides for the public on how to prevent spreading of alien species, which are available on their website.

With the *cross sectoral strategy on invasive alien species* and the *VKM report* (Norwegian Scientific Committee for Food and Environment) at base, the Norwegian Environmental Agency has developed an action plan to reduce the distribution of wild boar in Norway from 2020 to 2024 (Miljødirektoratet and Mattilsynet, 2019). In the 2022 evaluation of the action plan, continuation of the ongoing surveillance (to track population estimation and spread of wild boar) was stated as the most important prerequisite of succeeding with the wild boar action plan.

This includes wildlife camera traps from SCANDCAM and hunting statistics (Odden et al., 2022). The professional-civilian project SCANDCAM, led by the Norwegian Institute for Nature Research, has a wide network of wildlife cameras in both Norway and Sweden to maximise eyes and ears on wild boar. Most of the wildlife cameras are maintained by hunters or other outdoor recreational users, which is an intentional community involvement strategy (NINA, 2023). SCANDCAM also established an intense network of 213 randomly located camera traps in two municipalities in 2020 and 2021 (Odden et al., 2022). Additionally, the Norwegian database Artsdatabanken uses the mobile application Artsobservasjoner [Observations of species], where the public can register observations of species in Norway, including invasive alien species like wild boar. Observations registered by the public in Artsobservasjoner are formally included in Norway's current wild boar surveillance work (Odden et al., 2023).

The 2022 evaluation recommended continuing to compensate hunters for submitting samples from shot wild boar. Compensation was increased in 2023 from 1000kr to 3000kr for male boar, from 2500kr to 5000kr for sows, and from 3000kr to 4000kr for dead wild boar found in nature (Ministry of Agriculture and Food, 2023). Also new from 2023 is that all landowners receive 4000kr for each wild boar shot on their land, and hunters are encouraged to report "shot wild boar" using the online registry of Hjorteviltregisteret (the Ungulate registry) (Odden et al., 2023). In considerable detail, the hunter is thus now expected to report the number of shot wild boar, slaughter weight, age group, number of wild boar in the pack hunted from, and hunting method. The detection of African Swine Fever (ASF) in Fagersta, Sweden on the September 6, 2023 immediately mobilized politicians in Norway, and by September 21, 2023 the Norwegian Minister of Agriculture and Food announced that the wild boar in Norway should be exterminated. The management goal of eradication was formally added to the wild boar action plan in January 2024 (Miljødirektoratet and Mattilsynet, 2019).

The Norwegian Veterinary Institute evaluates all hunter samples of wild boar including testing of carcasses to rule out serious and contagious diseases such as ASF (Norwegian Veterinary Institute, 2023). As wild boar infected by ASF become severely ill and die soon after infection, detection in boar without visible signs of illness is unlikely. Samples from these wild boar shot by hunters are therefore not tested for ASF in Norway (Miljødirektoratet and Mattilsynet, 2022). Passive surveillance of found carcasses is considered the most effective surveillance method for early detection of ASF (EFSA et al., 2018). Diseased wild boar are detected actively through camera traps and hunter observations. Norway had one case of "found dead" wild boar in 2021, and ASF tests were negative (Grøntvedt et al., 2022). In this way, the enterprise is necessarily collaborative, involving civilians, veterinarians and authorities. Below we impart reflections from the practice of making this surveillance work.

5. Results: The government sending signals

5.1. Subsidies for biosecurity testing – the bounty of the 21st century?

The theme below answers the question of what sort of message the government wants to send about wild boar management and monitoring, as inferred by our informants. Although a range of subsidies are now present, eleven informants suggested that the financial incentive to send in samples of wild boar for e.g. trichinosis testing corresponded loosely to a *new kind of bounty* on the wild boar. A minority, around two hunters, were slightly critical toward this move, while others saw it as sending a clear message that the war on boars had to be fought by all hunters, with two informants even going so far as to push for it for other species. A landowner, for example, said: "I think a kind of bounty or reward for hunters would be critical. There should be one on all unwanted species really. Like the racoon dog and the deer" (I7). He further suggested "rigorous ones", would be "incentive enough to motivate a more intense culling. And it wouldn't cost the government prohibitively

[...] it's a kind of remuneration for hunters really and I think that's important" (I7). Another landowner conceded the reality of the situation thus: "well let's just say money makes the world go round, that's how it is [...] it's not officially a bounty but indirectly it does become one" (I4). In 2023, a bounty called 'the golden pig' could also be won by a hunter for submitting. It was suggested that financial incentives were especially important in a cultural context in which other incentives for wild boar hunting, notably meat and sport, were not yet strongly developed.

In more critical voices, two informants suggested that although bounties were an important motivation, the degree to which the government expected hunters to be 'on-call' at all hours to hunt boar, and to track and euthanize wounded game, was not sufficiently compensated today: "Those who can will go out on a call, and they get some sort of compensation for it, but no one actually gets compensated for being in a constant state of emergency and on call" (landowner, I4). This concern was echoed by a reflection on a de facto contracting of hunters as a result of the boar plan: "they're almost expected to be on-call firemen, but they don't get money for it" (hunter, I6) or, he noted, any sort of stable contract. Similar voices expressed scepticism on the insufficiency of the payment scheme for hunters: "It's true it seems like we shoot more wild boar after the financial incentive came through. But I'm concerned, that [the population] still increases. That we won't be able to shoot enough of them. We're definitely in a kind of key moment now, where if we don't act, well there will be too many" (veterinarian, I5). Equally, lack of compensation for desecrated crops from wild boar rooting was seen as an omission if the government wanted to be consistent in its signalling across the board, also to landowner-hunters, that the wild boar was an economic strain (I7).

Two hunters were critical toward the bounty/compensation on an ethical level. They argued it put a target on the back of female boars in a way that was unethical, because they were always accompanied by boarlets, who should not be orphaned (hunter, I15). Others held mixed thoughts, appreciating the positive signals from the government, but also cautioned how it was turning the hunt into "not a hunt, but just extermination" (for example, municipal officer, I20). Indeed, it was acknowledged that pressure from government was high, coming with signals to exterminate the boar through any means necessary by, among other things, legalising new weapons technologies. An informant lamented over the new dilemma on the personal level: "it can make the hunt less ethical. It's ultimately down to the hunter to take responsibility to hunt ethically, but the politics make it difficult" (manager, I9).

The government did not simply issue financial incentives for felled wild boars, but also offered a fund that people could apply money from to "test out different kinds of collaborations" (landowner, I4) in wild boar management, including systems of reporting and monitoring. Financial aid is partly available for some technical equipment in relation to such projects, where an informant noted that the municipality has contributed to the purchase of a drone for monitoring (I6). In reality, however, many hunters and farmers in particular communicated that the state expected (too) much of the countryside in the war on boars. "It's been a bit pushed onto us from above, which is curious [...] A lot of people say wild boar are to be 'managed locally' [said in a patronising way]" (landowner, I7).

Finally, as regard to fairness, in interviews as well as public hearings we attended, there was occasional criticism against the idea that private resources should be used to resolve a public issue: "It's an interesting thought, because the government enables wild boar [to roam] both in Sweden and Norway, but private initiatives are needed to remove the problem" (hunter, I39). By private resources, he was referring to the labor and expenses of hunters. This was repeated by another: "it's become sort of privatized, and you have to wonder how smart that is down the line. I don't think it's good" (landowner, I7).

5.2. Legislation shows the way

While economics is a universal language for the government to

signal, other actions from the state could also nudge the citizenry into the desired actions. Legislation was one way. Through “liberalising of the legislation” around boars, the state encouraged its culling (manager, I21). Law and regulation were considered important in signaling, for example in permitting the sorts of weapons you could use to hunt wild boar. For some years, hunting the partly nocturnal wild boar was a challenge in the absence of light, with one hunter-landowner reflecting: “what should the poor hunter do? Wait for the full moon to see what he can shoot?”, but, he conceded, “it didn’t take long for the government to allow fixed lighting on baiting sites and then later these thermal visions. We’ve been very happy and thankful about that, both hunters and landowners” (landowner, I4). Legislation was not merely enabling, but could also potentially be turned against hunters, compelling their involvement, like fines and quotas. But no informants considered this a feasible solution in Norway. “You gotta work with other incentives. You can’t force people to go out to hunt” (landowner, I31). Another added it would profoundly break with Norwegian tradition: “I mean it’s a whole other game if you make it mandatory” (veterinarian, I30).

How was the signaling by state authorities perceived as a whole? Did it have consistent messages and motivational pathways? We found heterogeneous evaluations across our informants. At a course we attended for wild boar hunting, the instructor stated “First [the state] wanted some wild boar, now they want none” (hunter, I40). Another hunter observed, prior to the 2023 aim of eradication, that a main problem with wild boar management was that “there’s no central or national level politics or guidelines when it comes to the wild boar problem, or whatever you want to call it and there’s no central inquiry per se. You can be pushed around in the agricultural department and the food inspection agency” (landowner, I7). He added that he wished for clearer directives and allocation of responsibility given “the situation is serious enough to warrant a national level response”. (I7). Incentives were generally viewed positively but “they maybe took a little too long to arrive. It really required the emergency focus on contagion [referring to the ASF 2023 outbreak in Sweden] for them to kick into gear” (manager, I29). Another suggested that in order to get hunters onboard at a meaningful scale to meet management goals, what was needed was a thorough understanding of what would motivate them (landowner, I31). To do so, required actually speaking with the hunters and asking them.

5.3. Hunters “intrinsically” motivated by civic duty – to a point

If law and economics were efficient, if blunt, tools to motivate citizens to fight the war on boars in Norway, they did not tell the whole story of hunters’ motivations. The fact that hunters openly considered some of the government schemes as inconsistent or even hypocritical, but still contributed dutifully to management, testified to this. Oppositely, that external rewards were not enough to motivate some hunters also shows a more complicated picture. We found that a sense of duty was strong among the hunters interviewed (and at meetings we attended), which may help explain their willingness and unwillingness to participate—depending on factors like if the vision they were expected to get onboard with was consistent with their vision for the environment. Stewardship as “intrinsic” motivation also needed to be actively nurtured by the state, perhaps through exhibiting gratitude for the contributions of hunters.

At the outset, nearly all hunters praised the Nordic ethos of stewardship. One stated: “I’d have to say that there’s quite a high sense of morals among Norwegian hunters” (hunter, I6). He suggested that as hunters, they were caretakers of the woods “I think we should take the responsibility for it, make sure it’s full of life after we’ve been there.”. While this ethos prevailed across hunter demographics in our sample, the labor was not always evenly distributed: “let’s not pretend the average age isn’t very high for those doing the reporting” (manager, I9). But this meant, to hunters, that the quality of monitoring and reporting for wild boar was quite high, comprised by dedicated volunteers past the retirement age, often with free time and resources.

5.4. It’s in everyone’s best interest

A hunter declared that whether you were for or against wild boars in Norway, the knowledge from participatory efforts of surveillance was ultimately in everyone’s best interest. “I think it’s super good to get concrete data [from GPS tags] on how the boars actually behave in these different areas” (hunter, I15). This was acceptable also in the case of highly instrumental reasons – to better shoot them “you have to take time to get to know them [before the first time you shoot them]” (municipal officer, I20). The testing available for e.g. trichinosis was also argued to be in hunters’ best interest, as if boar meat was the least bit underdone, there was a health risk to eating it. Indeed, not testing for e.g. trichinosis was seen as “not especially smart. You really ought to do it. We know that now” (hunter, I6). A hunter explained that while campaigns helped, those of us “from the farming country are used to taking samples from pigs, so that attitude is a bit in us, I think” (municipal officer, I20). This self-interest, common sense motivation extended clearly to any game animals showing signs of disease “I mean if you send in a sample and it’s bad, then that animal is forfeit, and it won’t go on your quota” (landowner, I25). That the government provides infrastructure and procedures for testing meat was thus consistent with what hunters considered to be part of being a good hunter.

Monitoring wildlife both remotely through digital traces and in person was seen as fostering knowledge and stewardship, building awareness of what you had in the woods and being able to “observe differences over time” (hunter, I6). The hunter added that he had contributed labor to NINA’s camera surveillance of deer and lynx in the past, but now ran his own personal project of 40–50 wildlife cameras “sometimes I’ll get action on all cameras and I wonder why. And I’ve started keeping a journal about it and correlated it to the cycles of moon and all that [laughs]. I’ve only done it for 3–4 years but over time it’ll tell you a lot” (I6). This was termed “hobby research” by one informant in our study, lesser in status, but still valuable and commendable.

5.5. Unhappiness with the monitoring

From veterinarians’ side, there was occasionally frustration with hunters monitoring, including lack of gentle handling, “pulverizing” and “turning the sample to mush” (in the case of Chronic Wasting Disease sampling) but on the whole, they expressed that hunters “did what the institute told them to do. They definitely did. They didn’t have a choice really” (veterinarian, I26). The veterinarian added: “But I think that they were sometimes not always happy about it” (I26). Not being always happy about it stemmed from both disagreements on the efficacy of the tasks they were supposed to undertake, and from resentment on using private resources to solve a public problem.

On the first criticism, a few hunters suggested that the relatively few boars in Norway meant that it was simply a big ask for hunters to locate them: “Just free searches is hard to do, there’s not that much pig” (hunter, I14). Criticisms were also directed at poorly placed cameras for capture wild boar observations “... where the odds of seeing them are low. Like on a little island in the middle of a lake [...] pretty random, and not good enough” (hunter, I2). It was also suggested that it is not enough to simply monitor that which poses a threat, but that which is *under* threat from the wild boars also needs surveillance: “I suggest that we start a project for registering damages to crop land and killed animals” (landowner, I7). Another perspective suggested that there would be some drop-off in reported boars for reasons of local conflict “people won’t report them because they don’t want to antagonize their neighbor” (veterinarian, I5). This reflection indicated that not all were onboard with the eradication goal at the outset, preferring to keep some small populations as game.

Second, that the government relied on appeal to civic duty to solve its crises was seen as brazen and problematic by at least three informants, indeed as a way of forfeiting responsibility: “the politicians just went ah thanks, now it’s not up to us” (I34). Some especially difficult wildlife

management topics, apparently, the government “simply didn’t get involved in” (I34). We found, however, that new problems could arise when “outsourcing” to civilians to evade responsibility (nature protection agency officer, I38). For one, it could end up selectively empowering different elements of civil society as these mobilized for the job (veterinarian, I34). Elsewhere, informants suggested that of course Norwegian hunters would rally and do their job, even if it sometimes ran counter to their own interest (of wanting to preserve at least some boar in the area as a game species). Such was the strength of their trust in authorities and their sense of duty (called ‘regeltro’, hunter, I39). “The dedication of hunters in the wild boar question and generally is exceptionally high. To think you can get people onboard like that without there being other incentives” (veterinarian, I30). This was compared to how Norwegians dutifully handled restrictions and lockdown during covid-19 so long as the government instructed them to do so. A scientist reflected on the eradication goal for boars in the country, to be achieved through civilian hunters: “it’s so imbued with duty and hunters will actually put the state’s interest above their own, which is kind of crazy isn’t it?” (scientist, I32).

5.6. Responsiveness of state authorities important

A prerequisite for hunters to essentially override their own interest in favor of the government, as per the reflection above was, at a minimum, good relations and collaboration with state agencies to whom they reported. This in turn, required a certain effort from authorities: “It’s so important for hunters to get quick feedback and message [after sending in samples] from labs or whoever processes their samples. In the past, that’s been not so great but it’s really improved now with new routines for monitoring” (manager, I29). Responses from interviewed veterinarians were mixed in terms of how positively they viewed the hunter-veterinary collaboration. Still, all veterinarians we interviewed were enthusiastic about the hunter collaboration: “I do think the direct dialogue and contact they have with hunters is pretty good, really the whole involvement of hunters in monitoring” (for example, veterinarian, I30). Two hunters and landowners in turn suggested that they had very good relationships with individual vets who visited them in the field, but that as a societal institution, they issued some directives they did not necessarily always agree with. To this end, it was clear that veterinarians, who were widely seen as dominant in operationalizing the war on boars agenda (together with agribusiness), were not a monolithic body to hunters even on the state level. Different agencies had different reputations for how they worked with hunters. “The food safety authority is a bit so-so in my opinion. The veterinary institute is usually receptive to communication and open. And that’s so important. Like ‘just contact us if there’s anything else you need from us’ (hunter, I2). Less responsive to hunters’ concerns were politicians: “We’ve had ministers here from the parliament saying; ‘oh we promise we’ll look into it.’ That isn’t happening” (landowner, I7).

6. Discussion: Motivational pathways revisited

In biopolitical governance, the state compels compliance from its citizens through an outsourcing of labor. If done successfully, tasks and rules become approved of and even internalized by citizens, among other things, as their civic duty. In wild boar management in Norway, especially following the eradication goal announced in 2023, this has become an outsourced necropolitical labor (von Essen et al., 2023). Much of this labor was in gathering data on wild boar to inform their eradication—finding their locations, luring them to baiting sites to shoot them, and scanning for diseases that could motivate a more wholesale eradication effort. The highly proactive surveillance for threats around wild boars as a species here enacts a so-called *vigilance regime* of monitoring with multiple eyes and ears (Haggerty and Trotter, 2013; Ivasic et al., 2022). That these eyes and ears needed to be those of hunters, who may at times have a complicated relationship with the state, formed our

study’s topic. Enrolling hunters was seen as necessary, also because the alternative was risky: taking management out of the hands of ordinary hunters would not only be cost-prohibitive, but would also, as Rutherford (2022) writes, open up authorities to criticism on how they handle the situation.

In a context where most hunters seem to ostensibly *want* to be called upon as stewards of the environment, but are wary of being misused for state purposes (von Essen and Tickle, 2020), we explored the motivational pathways that the state could use to appeal to them. These included appeal to civic duty and self-interest, financial incentives, and legislation. Where financial incentives are clear nudges to citizens, civic duty manifested powerfully for many Norwegian hunters as a kind of a stewardship identity (Kaltenborn et al., 2013). The stewardship responsibility was seen as especially important in a situation where there was at present little tradition in how to hunt it, and even less on how to cook it. Thus, selfless virtues on caretaking the native environment needed to be harnessed, although hunters also recognized that wild boar could soon become a valued game resource. However, in this study, hunters thought of their monitoring as both something they should do for their own sake, and for that of Norwegian nature.

We also found that the government may nudge directions also through such things as campaigns, facilitating sampling or monitoring, adjusting legislation, or otherwise providing the infrastructure that citizens can use. Facilitating this financially took up much of the discussion. A striking finding was that hunters in this study sometimes framed the financial incentives around wild boar as “bounty in a way”. Thus, they implied it was a bounty under a new guise—what we may term an acceptable bounty for the 21st century: subsidies for biosecurity testing. Hunters in Norway submitted up to today nine biological samples from a felled wild boar. Rutherford (2019, 2022) writes that the bounty becomes “politics by other means” (Rutherford, 2022; 75) and, we suggest, *necropolitics*.

It is perhaps not surprising that referring to subsidies as bounties on wildlife is a taboo matter, given that bounty in wildlife management has a problematic legacy. The history of the bounty, including its use in the fur trade to stimulate economic growth, or to protect livestock against predators, reveals some unsavoury practices and often the decimation of the species. Accounts of animal suffering and cruelty, to get the ‘bounty parts’, as well as fraudulence and farming for bounty, are recalled by historians (Proulx and Rodtka, 2015; Black, 2011). Saha (2021) suggests that the bounty signals values not so much about the species under bounty, but about that which is to be protected. For example, the value (bounty) of a dead crocodile was at one point closely related to the value of cattle (on which it preyed) as undead, or alive, capital. Much like other pest species on which bounties were placed, they became imbued with *eradication value*. Wild boar have been subject to bounty multiple times, including current schemes in Texas offering “\$5 per tail”. In Georgia, US, bounties were counterproductive: populations of pigs increased during the bounty period, in large part due to increased practices of baiting (increasing food availability) and because trophy individuals were targeted rather than ones contributing most to population growth (Ditchkoff et al., 2017).

In a less common case to get citizens onboard with wildlife management programs, not yet too visible in Norway, the duty to report, cull, or monitor e.g. invasive alien species can be ‘gamified’. While mere reporting may be a benign practice, such as toad tracker apps in Australia and the Wild Spotter app involving small cash prizes for diligent citizen scientists (Barker, 2010), gamified culling is more controversial. It means that meeting quotas for killed specimens or providing trophies, are turned into competitions with bonuses that come with money and/or prestige. Despite its unsteady ethical basis, it is a development that is increasing around the world, as a neoliberal, cost-effective way of governing invasive alien species. For example, lionfish derbies, snakehead fish lotteries, or python culling tournaments, enroll citizens as eager contestants (Hoag, 2014). This was only found in relation to the ‘golden pig’ bounty, and likely is at odds with the

stewardship ethos of Norway.

Finally, there is a one strategy governments can employ to increase the likelihood that citizens come on board with the wild boar eradication goal, one that is in contrast to the sovereign disciplinary power approach. That is to use the stick rather than the carrot and penalize them for not meeting quotas of e.g. culling wild boars or sufficiently reporting them. This is currently the model in some European countries, where hunters become liable for damage caused by boar onto agricultural crops (Vajas et al., 2023). Although the latter may appear an extreme example to hunting communities who are relatively independent from the state, Cretois et al. (2020) write that most European countries have some level of institutionalized species monitoring. In these systems, reporting of bags, observations and biological samples, are built into the very management systems that determine their quotas for the following year. This means a looped-in motivational pathway for hunters: their very practice depends on them recording data on species.

6.1. Why intrinsic and extrinsic divisions of motivations do not hold up

We began by observing the social psychology inspired research take motivations as static, individual and predictable properties of individuals. Insofar as studies have integrated consideration of the role of peers in influencing behavior, this has not been done on an overarching level, but as a specific motivation itself, peer pressure or social norms as predictors in social models (Clarke et al., 2021). Hence, the approach still locates responsibility for action within individuals or, at best, their immediate peer environment, and less within their broader sociopolitical context.

Moreover, the division between intrinsic and extrinsic motivations—with the former equated to stewardship duty and the latter to incentives like subsidies, or deterrents like fines—appears inadequate to fully comprehend why hunters are willing to undertake authorities' objective of eradicating wild boar. This inadequacy suggests that motivations are more nuanced and potentially also differ across contexts. That motivations are changing, communal and responsive to how authorities frame their participation has been illustrated in the past, but not linked to social psychology motivation research. Guimelli (1989) study of underlying motives for hunting in southern France provides a pertinent illustration of this social embeddedness. Guimelli illustrated how hunters' beliefs about the meaning of hunting (and thereby their motivation) were subject to changes along with other changes in the broader social and material structure. In the area of Languedoc, France, an outbreak of Myxomatosis among wild rabbits imposed a reorganization of local hunting practices. In response to the threat the situation posed to the ecosystem and therefore to the hunt, the hunters in the area were obliged to incorporate nature conservation measures into these new practices. As a result, the meaning that hunters attributed to hunting also underwent a transformation. Before the outbreak, primary motives for hunting centered around weapons, dogs, game knowledge and the value of meat. However, following the outbreak, an environmentalist perspective was integrated into this traditional framework. This shift fostered a new set of motivations, promoting an appreciation of nature as inherently valuable. Consequently, motives behind hunting practices evolved from focusing predominantly on skills to including a commitment to environmental stewardship.

Hence, from a true social psychological perspective, treating mental models—such as beliefs, motivations, representations, and frames—as social constructs fundamentally challenge the idea that they are inherent to either individuals or the socio-material structure. Within such frameworks, ways of thinking and reasons for acting are deeply intertwined with the broader social environment, including political and economic structures. Leggett (2014) suggests, on the idea of Fairclough, that nudges to inform motivations are far from stable reference points. They are “part of a complex ensemble of ideological messages and social and political interests” (p.12). The dynamics between motivations and these structures are mediated through social behaviors and cultural

practices, underscoring their interdependent nature rather than portraying them as isolated elements.

Ultimately, the implications of this study point to a need for managers and policymakers to think carefully about empowering citizens to undertake duties out of so-called intrinsic motivations. If hunters feel empowered as stewards to autonomously manage the environment, the state cannot always expect hunters to align with their agendas. If a stewardship identity, for example, affirms that hunters feel they have a better claim on what should be in Norwegian nature, and perhaps that wild boars are a part of this, their compliance with the boar eradication will likely be halted. As yet, we found that the desire to be dutiful to the state—an intrinsic motivation of sorts called *regeltro* (belief in and fidelity to laws)—overrode such concerns for many hunters. But if the state fails to nurture the hunters' contributions, it may result in amotivation.

Contrary to previous research that suggests that the state offering extrinsic rewards undermines intrinsic motivation in the long term (Kácha and Ruggeri, 2019), the effectiveness of compensating hunters for boar samples illustrates that “money talks” in multiple ways. Hunters value the compensation for both its financial benefits and its symbolic importance. It shows that their efforts are recognized and appreciated, boosting their confidence as responsible stewards of wildlife. This recognition enhances their motivation and commitment, demonstrating that motivations are not purely individualistic but deeply embedded in broader social and economic structures and highlighting the complex interplay between individual actions and larger sociopolitical contexts.

7. Conclusion

We problematized various pathways by which the government could signal hunters to participate in monitoring and management of wild boar—a de facto eradication—including financial and legislative tools (appealing to ‘extrinsic’ motivations) and appealing to hunters' sense of stewardship (as intrinsic motivation). Within this, we showed that a new bounty of the 21st century, in the form of subsidies for biosecurity testing, was emerging. We also showed how tensions arise when private resources are expected to be marshalled to solve what some consider to be ‘public’ problems.

Reflecting on their work for the state, our informants helped paint a complex, shifting picture of motivations that spoke more about what the government did – or was seen to not do or fail in doing – than any autonomous motivation of the individual. In addition to this, hunters and landowners especially were shown to not always agree on the reasons for, or desired goals of monitoring and culling wild boar in Norway. Various actors, even among the hunting community, were motivated by different drivers. Some appeared to consider it a civic duty as stewards; others a chore; others still are motivated by financial incentives offered by the government. Others ignored instructions and take care of wild boar carcasses privately, disagreeing with the management plan or with having been made to collect data for authorities. Our study contributes to reevaluating some of the social-psychological inspired research that locates the agency and responsibility solely with individuals, to instead consider them in a shifting dynamic with the state.

CRedit authorship contribution statement

Erica von Essen: Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Henriette Wathne Gelink:** Writing – review & editing, Project administration, Investigation, Data curation, Conceptualization. **Helene Figari:** Writing – review & editing, Conceptualization. **Olve Kränge:** Methodology, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare no competing interests

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Appendix A. Supplementary data

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Data availability

The data that has been used is qualitative and hence confidential.

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