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Research article

Where is the wolf? A multi-method comparison of social values and perceptions in a Swiss park

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This article presents our recent experience studying public perceptions, discourses, and social values in Park Beverin, a Regional Nature Park in Switzerland. We applied four social research methods (news media analysis, survey with micro-narratives, go-along interviews, and focus groups), and delved into the subject of wolf *Canis lupus* adapting a triangulation protocol and systematic process from the health sciences. We observed the recurring perceptions of 'wolf' throughout three of the four methods; however, depictions, values, prominence, and presence varied by method. Social values of the wolf were mostly silent when compared to other topics, and 'wolf amplification' and 'wolf fatigue' point to the need to rethink the social aspects in wolf management, conservation, and policy. The findings also show the need for diverse research methods for revealing social values and perceptions on sensitive topics that otherwise the use of one method may be masking or amplifying.

Keywords: Conservation, group discussions, interviews, media, micro-narratives, mixed methods, park, perceptions, sensitive issue, social value, survey, triangulation, wolf

Introduction

Transformation towards sustainability requires important changes in how societies value nature and biodiversity (Pascual et al. 2017). Three decades of sounding the alarm on biodiversity loss has been ineffective. To face this crisis, society needs urgent action in policy, governance, communication (Mace et al. 2010), and other disciplines and sectors. Promoting changes to facilitate biodiversity policies and practices that both halt biodiversity loss while respecting social justice demands the understanding and monitoring of social values (Michel and Backhaus 2019, Pascual et al. 2023). Social values are complex, diverse, and dynamic, and a value shift might only

happen slowly and in response to other (drastic) changes in the social-ecological surroundings (Manfredo et al. 2017, p. 778). Furthermore, sensitive issues in conservation, such as large carnivore (i.e. the wolf, *Canis lupus*) re-introduction or natural expansion, often reflect a disagreement between people about acceptable conservation practices (Frank 2016, van Eeden et al. 2021, Zscheischler and Friedrich 2022). Human–wolf coexistence, in particular, is a complex clash of different social values (Madden and McQuinn 2014, Manfredo et al. 2017, Anderson 2021).

Using distinct, sometimes overlapping nomenclature, different disciplines have been studying the social value of nature. The basic values theory of Schwartz (1992, 2012) identifies ten broad personal values (i.e. universalism, security, achievement, hedonism, stimulation, self-direction, conformity, tradition, benevolence, and power), which are differentiated by an underlying goal or motivation (e.g. self-transcendence, self-enhancement). Dynamic relations among the values exist. Actions towards one value have consequences that clash positively or negatively with other values, which in turn will have psychological, social, and practical consequences. People may follow different competing values, but this does not happen in a single act or at the same time and in the same context (Schwartz and Bilsky 1987, Schwartz 1994, 2012). Kenter et al. (2015) present the five dimensions of value in the context of nature, one of which they call the 'value concept', where they place transcendental and contextual values and value indicators. For Kenter et al. (2015), transcendental values equate to the broad values of Schwartz (1992, 2012) or the fundamental values of Fulton et al. (1996), while contextual or specific values are what Schwartz (2012) calls norms. Intergovernmental Science - Policy Platform on Biodiversity and Ecosystem Services (IPBES) also uses the typology of broad and contextual or specific values. In our study, we are referring to the conceptual framework and indicators established by IPBES with a particular focus on their value typology (Pascual et al. 2017). The IPBES framework summarizes key relationships and connections between people and nature, with its main components being nature, the benefits that people obtain from nature, and good quality of life (Díaz et al. 2015).

The IPBES framework distinguishes three categories of contextual values: instrumental, intrinsic, and relational (Chan et al. 2016, Pascual et al. 2017, Chan et al. 2018). Instrumental value is the value attributed to nature or any of nature's elements as a means to achieving a particular end. The valued object is substitutable by another object that fulfills the same purpose (IPBES 2018), for example, wolf-sighting tourism (Serenari and Taub 2019, Weiss et al. 2007). Intrinsic value refers to the values of nature or its elements and entities (habitats, species): it is the value that an entity (including abstract entities) has in and of itself. In contrast to instrumental or relational values, intrinsic value is assigned based on internal, inherent (rather than extrinsic) properties of the object or entity (Lynn 2007, Pascual et al. 2023). Examples include boosting the survivorship of wolf pups (Weiss et al. 2007) or the wolf's right to live. Relational values have been added more recently to the discussion (Chan et al. 2016, Pascual et al. 2017). These values are attributed to natural objects based on pleasant, important, and often reciprocal relationships between humans and nature or nature's elements, and among humans (including across generations) through nature (e.g. identity, sense of place, spirituality, reciprocity, stewardship) (IPBES 2017, 2018, Chan et al. 2018, Anderson et al. 2022, Hoelle et al. 2022). Unlike instrumental value in means-to-end relations, relational value is assigned to a specific object or entity, which thus cannot be replaced with another object fulfilling a similar function (Deplazes-Zemp and Chapman 2020, Pratson et al. 2023). For example, the Ojibwe tribes view the wolf or 'Ma'iingan' as kindred in North America (Gilbert et al. 2022).

Nature and its contributions can be positively, negatively (disvalue), or not valued (Hoelle et al. 2022, Lliso et al. 2022). Nature's disvalue can be understood as nature's negative effects (Rolston 1992). As with positive values, disvalues arise depending on individual or group preferences, beliefs, attitudes, and contexts (Lliso et al. 2022). Deplazes (unpubl.) provides as example of a relational disvalue the case in which one dislikes a particular animal because of disgust or aversion, even fear. An example of instrumental disvalue may relate to harm caused by an animal or plant. In this case, people do not dislike the animal or plant itself but rather the harm it does to other organisms. Deplazes (unpubl.) illustrates intrinsic disvalue as when the person dislikes an animal based on its intrinsic properties (e.g. being a predator), in which case, one expects the person to be coherent and equally dislike other animals with the same properties (e.g. dogs).

To study opinions, beliefs, values of nature, and ecosystems, scientists may use different methods and models. A range of conceptual models, and qualitative and quantitative methods, exist to identify the sociocultural values linked to nature and ecosystems, which in turn help researchers, stakeholders, and decision makers understand ecosystem services (and nature's contributions) in different contexts (Chan et al. 2012). While for quantitative data it is essential to adhere to statistical prerequisites, qualitative research focuses on a variation of individual perceptions and meanings and aims for an in-depth understanding (Maxwell 2010, Patton 2014). Among these methods, stakeholder or context observation, focus groups, surveys using micro-narratives, go-along interviews, and media analysis can be cited (Bergeron et al. 2014, Macpherson 2016, Teff-Seker et al. 2022). Different methods may provide diverse outputs and outcomes, provide inclusive results, or their results may speak to different audiences in different ways and to different stages of decision making (Moon and Blackman 2014, Jacobs et al. 2016, Pascual et al. 2023). According to Chan et al. (2012, p. 746) the 'appropriate characterization of a service or value (including valuation) is dependent on appropriate methods, and no method is universally applicable'. Moreover, people can express value explicitly through language or implicitly through actions. Valuation methods focus on values explicitly expressed (Barton et al. 2022, IPBES n.d.).

Research using more than one quantitative or qualitative method or mixed methods in a single study to respond

to research questions is common (Calvet-Mir et al. 2012, García-Llorente et al. 2012, Baulcomb et al. 2015). In one comparative study, over 90 out of 242 studies used at least two or more methods to assess cultural ecosystem services or non-material benefits (e.g. spirituality, identity, recreation) (Cheng et al. 2019). Most researchers emphasize the need to combine methods for better assessment of ecosystem services/nature's contributions to people and social valuation (Calvet-Mir et al. 2012, Xin et al. 2020).

Despite such needs, few works explicitly show how the results are integrated or provide a systematic triangulation process (Inglis and Pascual 2023). Rather, many researchers only highlight the need to triangulate results (Farmer et al. 2006). Triangulation helps to integrate results obtained through different research methods. The use of diverse methods and interpretive approaches has more to do with extending the reach and depth of understanding than on validity (Fielding and Fielding 1986, Nightingale 2015).

There is an ever-present, heated debate and conflict surrounding the wolf in most of its natural range, based on a context analysis (Fitzpatrick 2012, Coldwell 2019) of discourses and debates surrounding wolves in Switzerland and abroad (Supporting information). For over 100 years, the wolf has been extinct in Switzerland. After a decline and eradication in the late 19th and early 20th century, wolves came back to Switzerland in the 1990s. (Breitenmoser 1998, Breitenmoser and Breitenmoser-Würsten 2001, Dufresnes et al. 2019, Heinzer 2021, KORA n.d.-a). The first re-emigrated wolves were sighted in Switzerland in 1995, with a steady population increase over the following decade (Heinzer 2021). Switzerland is currently widely debating wolf management and conservation in politics and beyond. The national legislation based on the Federal Hunting Act was adjusted in 2023, facilitating the proactive regulation of wolf packs (Canton Grison n.d., KORA n.d.-b). Financial damages for farmers for killed livestock are compensated by the Swiss authorities (AJF GR 2022, 2023). Moreover, farmers can be reimbursed for additional costs generated by herd protection (OFEV 2023).

Recent studies revealed that red and roe deer density explained most of the wolf presence, followed by precipitation and hunting reserves in the western Alps as main factors in the selection of winter habitat during the recolonization period (Roder et al. 2020). On the other hand, wolf habitats are impacted by human presence, with wolves generally keeping a distance from humans unless suitable habitat availability decreases (Zanni et al. 2023). Perceptions of and feelings attached to the wolf generally follow an urban–rural divide (Zscheischler and Friedrich 2022), which is very visible in Switzerland, as shown for example by the results of the 2021 popular vote on the adjustment of the hunting law (Loi sur la chasse, LChP 2019). Attitudes towards the wolf change over time and are strongly interlinked with dominant cultural imaginaries (Tschofen et al. 2016). Thinking about or even living with the wolf can trigger many different emotions, from positive feelings, to fear, to increased distress in farmers (Slagle et al. 2019, Zahl-Thanem et al. 2020).

In a direct-democratic context as found in Switzerland, political debates are very much entangled with media and society discourses. Scholars often describe the wolf debate as a proxy conflict for others, such as conflicts aligned with 'urban versus rural' discourses (Tschofen et al. 2016, Frank and Heinzer 2019, Heinzer 2021). We thus saw the opportunity to contribute to the debate and a more nuanced understanding of perceptions about wolves with evidence stemming from the comparison and integration of results coming from media analysis, a survey using micro-narratives, go-along interviews, and focus groups. This study aims to understand the different results from the application of these four methods using the discussion of wolf management and conservation as an example.

In an initial study, we used four different methods (news media analysis, survey using micro-narratives, go-along interviews, and focus groups) to screen the emerging topics, values, experiences, and perceptions of nature in Switzerland. As a result, we observed that the news media analysis showed wolf discourses as one of the key topics in Beverin, a Swiss Regional Nature Park (henceforth Beverin), while the number of perceptions and experiences shared about wolves in the survey and interviews were limited, and nonexistent in the focus groups. Such seemingly inconsistent results, combined with the level of sensitivity observed on the wolf topic in the region, propelled us to ask the following research questions: Who perceives the wolf and how prominent it is in the region? What are the feelings towards the wolf in the region? Why do different methods provide different results? How do results on the social value, discourses, and perceptions of the wolf compare across these methods? What would the triangulation of results tell us about the values and perceptions regarding the wolves in the park?

Through the development and implementation of a formal and systematic triangulation process, we aim to understand whether and how these methods differ in their ability to capture various aspects of wolf social values, discourses, and perceptions, and to integrate those values. We contribute towards improved research design and data robustness when studying similar values and topics. We end the paper by providing research and policy recommendations with regard to how to approach value assessments.

Material and methods

Study area

Our study area was Beverin, in the Canton Grisons in the Swiss Alps (Fig. 1). Situated across two language areas, Romansh and Swiss German, the park covers nine municipalities with a total of 515 km^2 and is home to 3600 people. The mountainous rural area with alpine agriculture and tourism is situated around Piz (peak) Beverin and bordered by the Rhine River (Naturpark Beverin. n.d.-a). Since 2013, the park has been labeled as a 'Regional Nature Park of National Importance' based on the Federal Parks Ordinance of 2007 (Naturpark

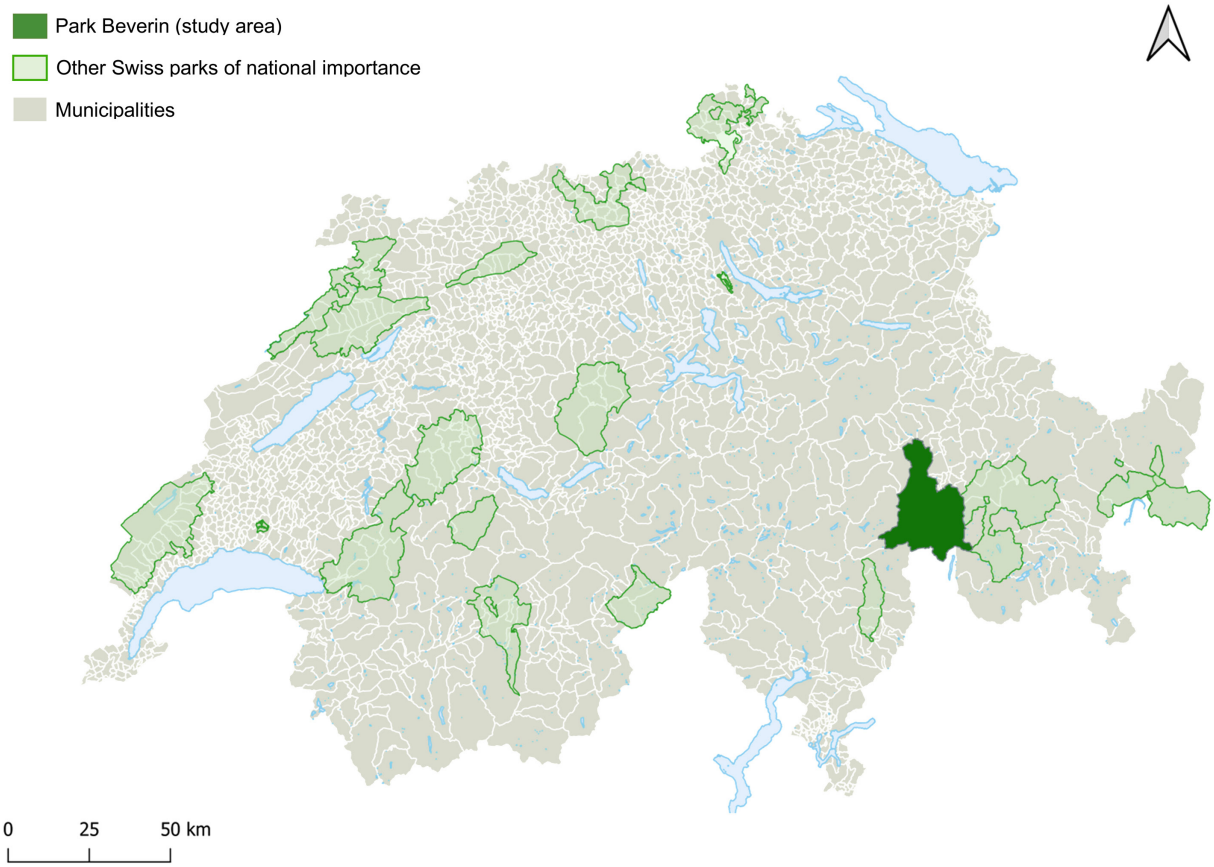

Figure 1. Map of Switzerland showing the study area (sources: ©swisstopo 2021 swissBOUNDARIES3D and GrandLacsCH; ©FOEN 2021 Revision Park Perimeter).

Beverin. n.d.-b; Swiss Confederation 2007). The objectives of this park category are to 'preserve and enhance the cultural and natural landscape, promote a sustainable economy in the region [and] environmental education and awareness-raising' (SPN, n.d.-a). According to the International Union for Conservation of Nature's (IUCN) protected area classification, Beverin falls into categories V and VI (SPN, n.d.-b), where cultural landscapes and sustainable use are valued (Dudley 2008). The first wolf in Beverin reappeared in 2005 (Fumagalli 2021). During the last decade, more wolves migrated to the region (AJF GR 2020).

Data collection, sampling, and instruments used in the analysis

Below we present the different methods and research process used in the wolf-specific studies, and relevant details of the initial study (Fig. 2).

News media analysis

For an understanding of the relevance of the wolf topic in Beverin, we applied computational and qualitative text analysis of Swiss news media articles, building on the analysis of Komossa et al. (2024). The dataset comprised newspaper articles acquired from the Swiss media database Swissdox, which encompasses a variety of media channels including paper-based and online news media at different regional scales, such as St. Galler Tagblatt (regional daily newspaper) and nzz.ch (online medium). After searching for pertinent articles using a search query of 'Beverin', we limited the articles to those written in German (no computational language packages exist for Romansh) and published between the years 2000 and 2022. Then we cleaned the data, including duplicate removal, resulting in 767 articles for the analysis. The text corpus went through natural language processing (i.e. text tokenisation, lemmatization, part-of-speech tagging, and stop words removal) using spacyr in R (www.r-project.org, Benoit and Matsuo 2020), and we filtered nouns to run structural topic modeling using the 'stm' package in R (www.r-project.org, Roberts et al. 2019). Then, we reviewed the candidate topics ($k=8$) during an expert workshop in May 2022 to label the topics based on in-depth context with local knowledge. The experts labeled one of those topics 'wolf'. We then filtered news media articles with a high probability of belonging to the 'wolf' topic ($n=192$) and proceeded with sentiment analysis using SentiWS, a German-based sentiment lexicon (Remus et al. 2010). As a result, we summarized keywords corresponding to positive, neutral, and negative sentiments. FK, whose first language is German, translated all the text in the result into English.

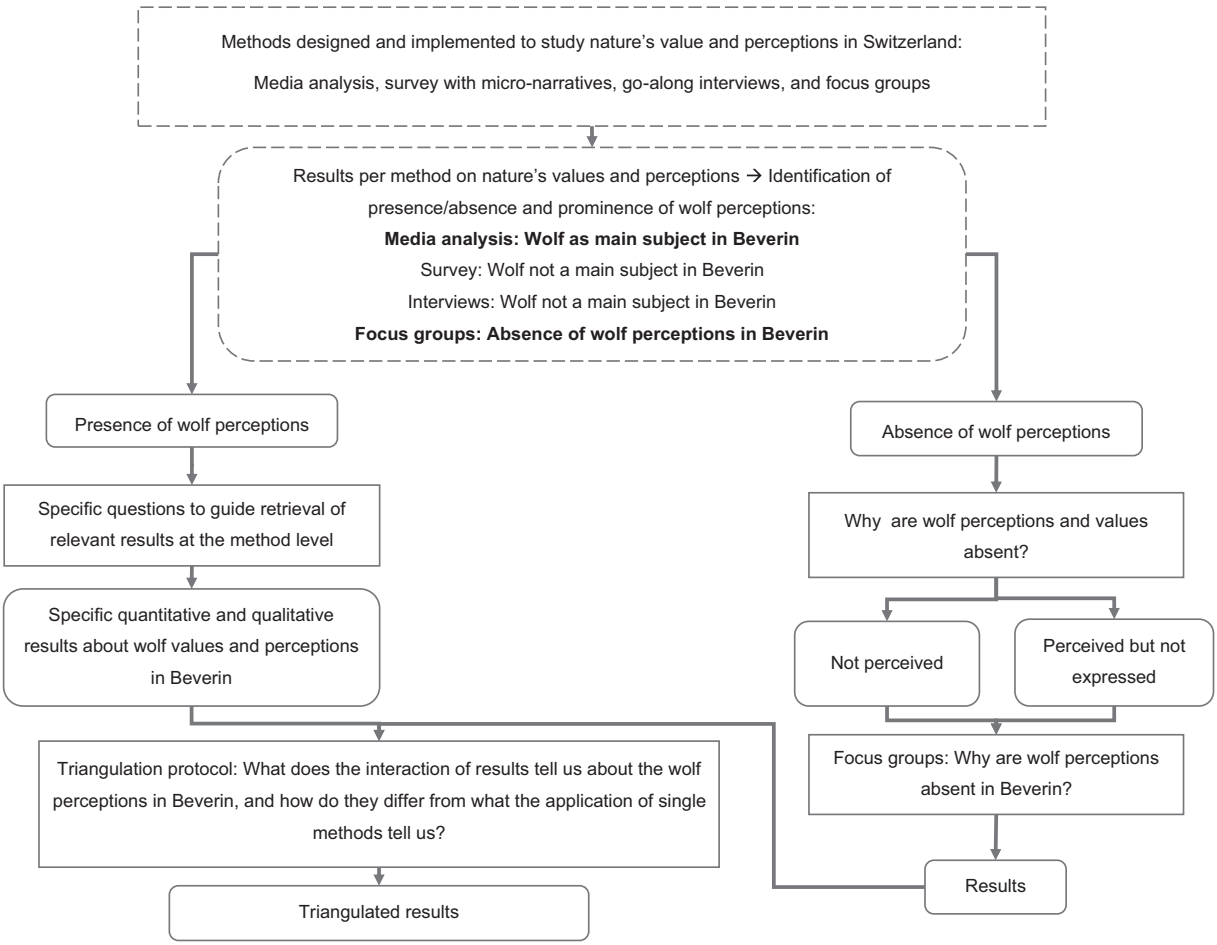

Figure 2. Flow chart of methods used and process. Boxes with dashed lines represent the initial study to capture overall values and perceptions of nature. Boxes with solid lines show the methods and process of this study/wolf study in Beverin.

Survey using micro-narratives

To study the wolf, we used existing data obtained through a survey implemented by Cracco et al. (unpubl.). The Swiss Federal Statistical Office (FSO), from their registry of residents in municipalities in Beverin, provided a representative sample of 250 residents aged 18 years old and older in January 2021. FSO provides samples based on a random selection of addresses per municipality, over-representing residents in high-density areas/towns. Potential respondents received a survey invitation letter with a link. We complemented the online survey with a paper version sent by mail and as a reminder. Our response rate was 31%. Considering the initial number of individuals to whom we sent the questionnaire, and the actual number of valid responses (78), our results remain indicative. The questionnaire included a prompting question where we asked respondents to write a micro-narrative or a short experience in or with nature (i.e. 'Remember a time when you were close to nature, near or at home. In one or more sentences, simply describe this experience, which can be unique or frequent, positive, negative or neutral'); a series of dyads and triads to measure how respondents interpreted their own micro-narratives; multiple-choice questions linked or not to the micro-narrative; and socio-demographic questions (i.e. gender, age, professions, and association memberships). SenseMaker® (by Cognitive Edge), a commercial software package, housed the questionnaire during data collection. In the initial study, respondents valued nature primarily for recreation and relaxation, air and water filtering capacity, and its climate regulation. To prepare the data for the wolf study, we curated the comma separated values (CSV) dataset containing the 78 responses from Beverin. We completed a deductive qualitative content analysis of the experiences shared by the respondents. Deductive content analysis refers to using pre-existing categories, frameworks, and codes and applying them in new contexts (Elo and Kyngäs 2008) (e.g. the researcher searches for the code 'wolf' in the micro-narratives). We searched for words like 'Wolf' (wolf), 'Wölfe' (wolves), 'Luf' (Rhaeto-Romanic 'wolf'), 'Raubtier' (predator), 'Canis', 'Lupus', and 'Rudel' (wolf pack). Two native German speakers translated the experiences into English. We then implemented an analysis of frequencies of these experiences combined with other responses from participant and demographic data.

Go-along interviews

To explore human–nature relationships, we conducted 10 go-along interviews during walks (Hein et al. 2008,

Bergeron et al. 2014, Macpherson 2016) with local people of the study region. The sampling strategy followed a three-tiered approach based on criterion sampling (person has to live or work in the study area), maximum variation sampling (aiming for a diversity of vocational backgrounds, age, genders), and snowball sampling (Patton 1990). With this strategy, we achieved a mix of respondents, such as farmers, foresters, teachers, and tourism professionals. Starting with the prompt 'show me a meaningful place for your everyday life in nature', the participants led the interviewer through the landscape around their place of residence. Using a semi-structured interview guide, relevant questions were asked to better understand the meanings of landscape elements and characteristics, personal perceptions, conception of 'nature', and important practices in and with nature. The interviews were audio recorded and transcribed and later analyzed following Mayring's (2014) qualitative content analysis, with deductive and inductive steps. In inductive content analysis, categories and codes are created from the data (Elo and Kyngäs 2008). We used GPS trackers and researcher-generated photographs for further analysis. At times during the conversations, participants mentioned the theme 'wolf'. Twice, the interviewer did directly ask: 'Are you not afraid of the wolf when you come here on your own?' (B4) or 'especially now that the wolf is coming?' (B3) even though the topic did not come up earlier in the interviews. Moreover, the interviewer's perception of verbal and nonverbal cues were noted in a postscript after each interview and considered in the analysis (Denham and Onwuegbuzie 2013).

Focus groups

Based on the go-along interviews, we held a workshop with 15 participants, divided into four smaller heterogeneous discussion groups, a year later in the same area. The sampling followed a similar strategy to the go-along interviews, resulting in nine female and six male participants with various backgrounds such as farmers, foresters, tourism professionals, conservationists, craftspeople, or people working in retail. The aim of the workshop was to receive an in-depth knowledge of the everyday meanings of nature. Printed maps (A0 size) of the respective regions were used to guide the discussions and served as a basis for participatory mapping (Komossa et al. 2021). In a first step, we asked participants to mark three significant locations on the landscape for their everyday lives ('hotspots'), and three insignificant locations ('coldspots'). In a second step, the moderators asked the participants to indicate areas where they think nature is the most 'intact'. We applied qualitative content analysis with deductive coding (pre-defined codes) for data analysis (Mayring 2014).

Interaction of results: triangulation of findings

In addition to inductively reviewing the results to identify the main themes, we used the IPBES Framework and definitions to analyze the results emerging from the survey narratives, interviews, and focus groups in light of the three main contextual values: relational, intrinsic, and instrumental (Pascual et al. 2017).

To connect and compare social values and perceptions emerging from our four methods, this study used methodological, data, and investigators' triangulation (Denzin 1978, Patton 1999). As an innovation, we used a triangulation protocol based on Farmer et al. (2006) from health sciences (Table 1), which includes the establishment of triangulation steps and activities to follow in each step. We added the quantitative results from the news media analysis and the micro-narratives survey, and slightly modified Steps 5 and 6. For Step 5, one researcher compared the assessment of convergence, clarified interpretations, and determined the degree of agreement, while the other participating researchers reviewed the results of this step. During Step 6, we omitted the process to obtain feedback from participants and stakeholders given resource limitations. Thus, we only collected feedback from the research team.

As described above, our analysis used results stemming from the implementation of quantitative and qualitative methods. In this study, we especially focused on a total of 10 records mentioning the wolf: five out of 78 micro-narratives;

Table 1. Triangulation protocol (adapted from Farmer et al. 2006).

Step	Activity
1. Sorting	Sort results from each method into similar categories that emerge from the research question(s) in relation to the social value of the findings from interviews, narratives, and focus groups. Review inductively the contents of the general results to identify the key themes to compare for presence/absence, frequency, prominence, meaning, and examples. Sort and review frequency/quantitative analysis from the news media analysis and the micro-narrative survey.
2. Convergence coding	Compare the results per value and theme and determine the degree of convergence: – Full agreement: agreement between the results on the theme. – Partial agreement: agreement on some of the results on the theme. – Silence: one or two sets of results cover the theme, whereas the other sets of results are silent on the theme. – Dissonance: disagreement on the set of results on the themes/elements of comparison.
3. Convergence assessment	Review all compared results and provide global assessment of the level of convergence.
4. Completeness assessment	Compare the nature and scope of the unique topic areas for each method.
5. Researcher comparison	Compare assessment among multiple researchers. How will the researchers manage disagreement?
6. Feedback	Review and feedback to research team of triangulated results.

four out of 10 interviews; and one out of four focus groups. Recent research shows that qualitative analysis can reach saturation at small sample sizes of nine to 17 interviews or four focus groups (Hennink and Kaiser 2022). Our quantitative indicators for the news media analysis were based on all 192 media articles, and the five responses from the survey with micro-narratives were linked to a response rate of 31% in Beverin. Therefore, we obtained both (media and survey) results from samples involving a representative population of residents or articles.

At least one researcher led the analysis of social values and disvalues, which two independent, informal reviewers and then the entire team reviewed. Similarly, one researcher led the wolf thematic analysis, which the entire study team reviewed.

Results

Triangulation step 1. Sorting

See Supporting information for sorted results emerging from the different methods: A) social value and disvalue of the wolf: relational, instrumental, intrinsic; B) main themes: 1) appearance and evolution of discourses and perceptions, 2) prominence and frequency of wolf discourses and perceptions, 3) feelings about the wolf, 4) who perceives the wolf? 5) policy and management.

Triangulation step 2. Convergence coding

In this section, we report on each of the previously identified main themes and social values, by level of agreement, disagreement, or silence. We set the 'silence' code when one or two sets of results cover the theme or value, whereas the other sets of results do not express or mention the theme or (dis)value (see Table 1). Some quotes can be assigned to more than one theme or value, whereas some quotes are too short to clearly identify the underlying value.

Appearance and evolution of wolf discourses and perceptions – full agreement

Wolves and wolf discourses increased recently (2019–2020) in the region. The news media analysis shows 2019 to be the first year to have substantial media attention about wolves in Beverin. At least one survey respondent places their wolf encounter in 2020: 'The wolves are back' (M1). One interviewee's quote from the go-along interviews is illustrative of this comeback:

> 'The wolf and the lynx (…) and the bear, which we had here (…). It's, well, for me as a game keeper it's quite (…). So, if someone would have said 20 years ago, you'll have wolf, lynx, and bear here, I would have told him 'you're completely crazy'. Now we've had them all' (B9)

Who perceives the wolf? – full agreement

The answer to this question is not straightforward and depends on the methods used. In the survey, we observed that wolf experiences were voiced by long-time (eight or more years living in the area) Beverin residents mainly from rural municipalities. In a closer zoom of news media articles, we can observe who talks about the wolf and in what locations. The most frequently mentioned entities (i.e. organizations) are primarily the federal administration offices (e.g. the Office for the Environment, the Cantonal Hunting and Fishing Office), followed by NGOs (e.g. Pro Natura, WWF). We also spotted a few opinions from researchers from the Swiss universities of Bern and Lausanne. The most frequently mentioned locations were 'Kanton Graubünden', 'Piz Beverin', and 'Naturpark Beverin', as well as 'Surselva' and 'Bündner Oberland', both regions in the canton. From the micro-narratives, interviews, and focus group, we identified respondents from the following groups perceiving the wolf: farmers, a grandmother, tourism professional, hunter, shepherd, game keeper, culture association member, environmentalist, and health care professional. Two interviewees speculated about the number of people encountering the wolf. One stated, 'many people in this valley have seen wolves (…). The wolves are around us here, there are packs all around us' (B8).

Instrumental disvalue – partial agreement

Considering only those voicing it, we could have coded the instrumental disvalue as full agreement. However, in considering all stakeholders and respondents, we categorized it as partially agreed. From the perception of people fully agreeing on the instrumental disvalue of the wolf, the following experience from a survey respondent is illustrative:

> 'Finding a doe killed by wolves in immediate vicinity of the village, 100 m from the playground, 200 m from the school. Wolves howling during the night, daily wolf sightings and game kills in the near vicinity, wolf encounters during the day by colleagues and acquaintances, in the valley with a lot of tourism' (M4)

Another quotation from an interview stating instrumental disvalue:

> 'Interviewer: Do you have to go and check the [alpine] pasture every day?
>
> Respondent: No, we actually go every day, yes (…) because of the wolf we go every day now, because before, when the wolf wasn't here yet, (…) we went every other day, but now with the wolf I think it's even a rule that you have to go every day' (B8)

Prominence and frequency of discourses and perceptions – partial agreement

Despite agreement in wolf evolution/appearance in the region, we observed a partial agreement in the prominence and frequency of perceptions and discourses. Through the news media analysis, we observed that wolf discourses in Beverin have become a pressing topic in the news media since 2019, as one of eight main topics about Beverin and leading the surge in the number of newspaper articles (192). The main source of the 'wolf topic' was online media (~67%), including nzz.ch, srf.ch, blick.ch, and 20 minuten online.

Survey results showed two very negative experiences rated as frequent, while one positive experience rated as unique. Overall, we noticed a lower prominence of perceptions in the survey (6%) compared to the frequency of media articles (25%). During the focus group discussions, the wolf topic did not arise by itself. When the facilitator asked one group why this was the case, participants described the topic as so emotional that they voiced the need to apply self-censorship in a public setting (in the presence of farmers), and especially when the conversation was recorded, as was the case in the focus group discussions. One person said, 'Yes, because it is so emotional' (R4). Another stated, 'It is crazy! (…). Especially with the farmers' (R1). The go-along interviewees showed us the prominence of the topic. According to one participant, 'Yes, it is a huge, huge topic' (B4), while another stated, 'And at the moment, the wolf is a red-hot topic for us' (B8). We interpreted an overall 'wolf fatigue' in two interviewees. One stated that 'you don't feel like talking about it anymore because some farmers are deadlocked' (B4), whereas another interviewee (B3) changed the topic immediately when asked about the wolf, which the interviewer interpreted as a potential avoidance of the topic.

Relational value – silence

We found one micro-narrative signifying a relational value. A grandmother stated:

> 'Observing wild animals (…) what does it mean to live with the wolf? (…) Searching for animal tracks in winter – so interesting! I am always amazed at how quickly the children, the smallest granddaughter is 2½, can grasp nature, acquire a knowledge and understanding and are so comfortable – simply, the most beautiful playground!' (M5)

Reflecting on its conceptualization (Pratson et al. 2023), this quotation relates to aesthetic values and the valuing of family connections and histories, which are both characteristic relational values (Arias-Arévalo et al. 2017, Himes and Muraca 2018, Chapman et al. 2019). However, a few interview comments were too short or lacked enough context to clearly identify underlying value types. This was the case with the comment 'Because sure, I think the wolf is a fascinating animal, it's not that I think it should be eradicated' (B8), which could have been interpreted as being valuable due to being fascinating (relational value) or if the wolf is fascinating, because it has value in and of itself (intrinsic value) (Deplazes unpubl.).

Relational disvalue – silence

The closest relational disvalue we could interpret among the results was the one illustrated in the following interviewee's comment, 'I even mean – they sometimes have [preschool] forest groups in spring in [village] A. And they were even afraid in spring to go outside with the children' (B4). However, the interviewee is describing this disvalue coming not from themselves but from others. A farmer perceived another disvalue:

> 'How do those people who are on the sheep pasture feel when the wolf kills a few sheep every day? You know (…) how does the shepherd feel now? It's now the third attack in a row – it's anything but fun (…) always picking up the half-dead animals. It's part of the Alpine landscape now, the protection of this landscape, so to speak' (B8)

Instrumental value – silence

We did not find any quote instrumentally valuing the wolf.

Intrinsic value – silence

Two interviewees intrinsically valued the wolf, stating, 'Yes, yes (…) they [wolves] are very clever, us humans, we're way more clumsy than any wolf' (B8). Cleverness as a wolf characteristic revealed a less common form of intrinsic value, instead of its usual 'sentience' form (Deplazes unpubl.). In another part of the interview, the same interviewee mentioned, 'I understand that people in the lowlands say that the wolf belongs to the landscape, it's an animal that has the right to be here' (B8). Considering all study participants perceiving the wolf, we observed that most remained silent about its intrinsic value. As with relational values, a few quotations do not provide enough context or information to ensure its categorization as intrinsic value. For example, there are traces of intrinsic value in the following quotation, 'And, uhm, yes as wolf advocate, you are in the minority here' (B4). In this case, there is too little context to understand the value, as someone could advocate for instrumental, relational, or intrinsic values.

Intrinsic disvalue – silence

One interviewee described an intrinsic disvalue of the wolf for its 'brutality' and 'predatory' nature: 'Two days later I found a dead calf under a small fir killed in the most brutal way. Since at that time wolves were living in the vicinity, it was clear who it was' (M2).

Feelings about the wolf – disagreement

In the go-along interviews and the focus groups, speaking about the return of the wolf was highly emotional and sometimes triggered fears. One survey respondent clearly showed signs of anger in his narration. However, feelings attributed to the wolf are not always negative. Two survey participants perceived their experience as very positive, inspiring and offering learning opportunities. A go-along interviewee described the wolf as fascinating. Our results also showed that the profession, such as being a farmer, did not necessarily correlate with negative perceptions of the wolf. Furthermore, one survey respondent, a member of a hunting association and professionally active in agriculture/forestry or fishing, perceived the wolf experience as neutral. In general, frequency of wolf interactions influenced the described feelings: negative and neutral perceptions were linked to frequent experiences, positive ones were linked to unique experiences. During the go-along interviews, we sensed that a few people did not really like to talk about the wolf, since it is very emotional and loaded. Or, as this wolf advocate put it, 'And, uhm, I see the argument of

the farmers very much, but yes (…) at some point you don't feel like talking about it anymore. Because some [farmers] are deadlocked' (B4). The silence met during the focus groups clearly illustrated the reluctance to speak about the wolf in a public setting. When the facilitator asked one group about the wolf, the unanimous answer was to avoid it because of its strong emotional component. The news media analysis revealed that while the majority of sentences in news articles remained neutral, the way Swiss media is dealing with the wolf topic is slightly more inclined towards negative feelings (Fig. 3).

Policy and management aspects – disagreement

A general disagreement with the policy side of the wolf exists. This micro-narrative illustrates this aspect: 'Now the question is, what should the biodiversity, about which the Swiss people voted, be. I also am fully in favor. But did we vote about large predators like bears, wolves, lynx – I say no. In the cities, all large predators are in the zoos under lock & key, from this (?)! Why!!' (M2). We found a similar sentiment from an interviewee:

> 'The new hunting law that was rejected, was rejected mainly by the people from the lowlands. (…) Mountain areas accepted it. Because we have the psychological strain. (…) And I think if we could get more people to, you know, come with me one day. (…) You go to a sheep pasture where the herder has to collect the half-dead sheep in the morning and might have to release them. This would give a whole other impression' (B8)

Both participants disagree with the perceived opinion of other people, namely people living in 'the lowlands' and 'cities'. For this reason, we coded this policy aspect as disagreement. Regarding management, while the focus group participants wanted to refrain from discussions (e.g. 'you can speak about money, but you should not speak about the wolf'), the interviewed farmers perceived that they need to bear the costs (additional workload, as well as emotionally) to protect their livestock and alpine pastures. One focus group brought up the protection and management of herds and the need to coordinate among key stakeholders. Additionally, we learned during interviews that, regarding livestock, local farmers are actively involved in an ongoing debate on how to best protect their animals. During this discussion, the issue of coexistence with the wolf and how it imposes additional work on farmers, also emerged. For farmers in particular, the presence of the wolf means more work hours. For example, farmers need to visit the pastures every day to check electric fences and, in case of a wolf attack, they must remove wounded or killed animals from the herd. Among farmers, however, there is agreement that certain protection measures seem to work, while others might pose additional potential for conflict, as explained in this exchange:

> 'Interviewer: And herding dogs aren't a solution?
>
> Respondent B8: Yes, for us farmers it probably would be, it actually is a solution. But then you have disputes with the tourists. Because if a hiking trail goes through an alpine pasture with four herding dogs, then you'll get a slap on the wrist from the tourism'

Besides the need for coordination among farmers, and potentially tourism professionals, an interviewee explained the involvement of the authorities in wolf management:

> 'There is, uhm, like a service from the canton (…) where everyone could've enlisted if they wanted information via SMS, if (…) a wolf has killed a sheep or cow or whatever kind of animal in the region, then you receive an SMS (…) and it always says additionally if there was some herd guarding in place or not' (B8)

Triangulation step 3. Convergence assessment

Our results show social values attached to the wolf are mainly silent. The analyzed wolf themes showed scattered convergence codes with the same amount of disagreement and full agreements. We summarize the convergence coding in Table 2.

Triangulation step 4. Completeness comparison

We compared the diverse sets of results to highlight similar and unique contributions to the research questions, summarizing overall findings. The survey with narratives presented the wolf perceptions with balanced feelings in Beverin, with the same number of people with very positive and very negative experiences about the wolf including a neutral one. Not all farmers were negative about the wolf. The survey also showed that the topic is less predominant than in the media analysis. The majority (94%) of survey respondents did not

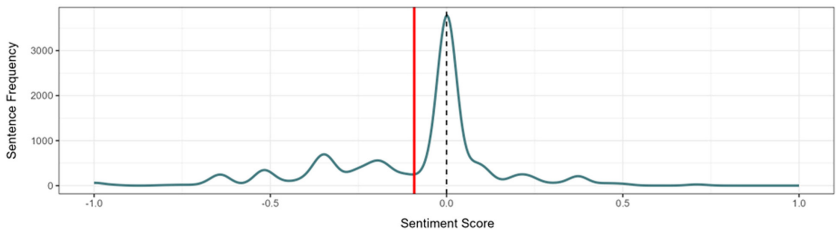

Figure 3. The distribution of news media sentiment towards the wolf in Beverin; sentence n = 5594. The dashed vertical line indicates the sentiment score to be neutral (score = 0). The red vertical line indicates the average of the sentiment score, which lies slightly on the negative side with a score of −0.09.

Table 2. Summary of Step 2 – convergence coding of the triangulation protocol.

	Convergence code			
Contextual theme	Agreement	Partial agreement	Silence	Disagreement
Relational value			Mostly	
Relational disvalue			Mostly	
Instrumental value			Entirely	
Instrumental disvalue		Mostly		
Intrinsic value			Mostly	
Intrinsic disvalue			Mostly	
Evolution of wolf discourses and perceptions	Mostly			
Prominence and frequency of discourses and perceptions		Mostly		
Feelings about the wolf				Mostly
Who perceives the wolf?	Mostly			
Policy and management				Mostly
Total	**2**	**2**	**5**	**2**

even raise the issue in their experiences about nature, while the news media analysis uncovered 25% of media articles in Beverin referring to the wolf. While the survey is anonymous and individual, giving respondents more freedom and ease to share their experiences, the news media analysis showed it as a collective discourse mechanism shaped by groups and institutions (see Supporting information, where we show which parties were involved in our data) (Hansen et al. 1998). In the focus groups, there was silence about the wolf return controversy unless a question was asked directly. However, once asked, certain issues were raised that did not surface in the other methods (e.g. the topic is 'not allowed'). The go-along interviews also brought up other interesting aspects not observed in the other methods (e.g. 'wolf fatigue' and 'the existence of a 'deadlock in the discussion') from participants.

Triangulation step 5. Researcher comparison

We limited this section to the discussion of any disagreements during sorting and convergence coding. Social value sorting diverged among the researcher and informal reviewers. Main causes for this were limited context for certain quotations and quotation succinctness that limited value interpretation, the simultaneous presence of multiple values in one quotation, individual interpretations and application of social value definitions, the existence of varied worldviews (Jürgens et al. 2023), and own values and perceptions. See Supporting information for any major disagreement we discussed and resolved.

Triangulation step 6. Feedback

We received feedback for the sorting, convergence table, social value and disvalue results, and discussion sections from a values' scholar (Anna Deplazes). Any comment misinterpretation is the sole responsibility of the authors.

Discussion

During our research process, we suddenly encountered silence as a dominant part of our results, Therefore, we will focus the discussion on the two types of silence observed: silence in the social value of the wolf and silence brought about by the methods. Additionally, we discuss the amplification of wolf discourses and 'wolf fatigue' in Beverin. We close the discussion section by discussing the triangulation protocol.

The meanings of silence in wolf perceptions and values

Since silence is a behavior with diverse causes, it is hard to interpret. Observing and studying silence requires interpreting a symptom that looks the same but may indicate different motives and mindsets (Dyne et al. 2003, Morrison and Milliken 2003). This study revealed major silence on the relational, intrinsic and instrumental values, and the relational disvalue of the wolf in Beverin. Most research in conservation science and sustainability remains in the positive value realm with few cases addressing disvalues of nature (Rolston 1992, Lliso et al. 2022). Describing and understanding the occurrence of silence in social values remains understudied. How other disciplines treat silence may help us understand the silence regarding the wolf found in our data. Thus, we discuss potential explanations in the following sections.

Many disciplines discuss silence including psychology (Reik 1968), management (Morrison and Milliken 2000, 2003, Kish-Gephart et al. 2009), political studies and negotiation (Jeffres et al. 1999, Cortini 2001, Curhan et al. 2022), communication (Kielwasser and Wolf 1992, Acheson 2008), music (Beeman 2005), epistemology (Dénommé-Welch and Rowsell 2017), indigenous people studies (Styres 2008), environmental philosophy and psychology (Nicholsen 2003), and environmental sciences (Carson 1962). In these disciplines, silence has been characterized as oppressive, disapproving, forgiving, 'calm sympathy', 'intense hostility', or meaningful (Reik 1968, p. 182). If discussed in relation to speech, both speech and silence are intertwined and perceived as opposites (Acheson 2008) even the opposite of speaking up (Morrison and Milliken 2003). Of the two, silence tends to be perceived negatively as speech absence (Acheson 2008). In western knowledge systems, with specific assumptions and cultural values, silence and speech have become a 'dichotomy' in

opposite corners or 'two sides of a coin' (Clair 1998, Acheson 2008, p. 536). Silence in the social value of the wolf requires identification and discussion. We define silence as the lack of direct or indirect expression of a value or non-value (Table 3).

Even though we are simplifying 'silence' as a dichotomy between expression and non-expression, the matrix proposed below intends to help visualize and understand the different expressed values and 'silence' that could be present in any given context. We are uncovering a potential 'silence' in social values of the wolf, something the social value and wolf literature has not reported or discussed yet. To illustrate silence in the wolf value context, using the understanding of silence gained from different disciplines, we present a few cases and our interpretations.

The relational disvalue of the wolf was limited to two comments, one of which referred to preschool teachers being afraid to go outside with the children because of the wolf (B4). In this case, the interviewee described the disvalue of others, but not their (possible) own. The main motives for silence may include self-censorship; to avoid expression; to reduce cognitive dissonance discomfort (Festinger 1962, McKimmie 2017); to remain unexposed, in the sphere of the private; and to protect our loved ones (in the larger sense, including love of nature). Additionally, vulnerability could keep us silent; our vulnerability and that of what we love. Not mentioning what one loves will somehow keep them safe (Nicholsen 2003). Therefore, fear is a motive for silence (Bowen and Blackmon 2003, Creed 2003, Milliken and Morrison 2003). In general, fear associated with wolves is well known and tends higher before their arrival. However, fear tends to dissipate with experience (Zimmermann et al. 2001, Røskaft et al. 2003). Fear can also be induced based on a strong relational value from farmers towards their livestock and farmlands (Chapman and Deplazes-Zemp 2023), which was also observed in a go-along interview (B8). In this context, the wolf re-appearance threatens deep-rooted ways of life and attachment, and can cause stress (Zahl-Thanem et al. 2020). Against this backdrop, the silence observed in the relational disvalue of the wolf may be difficult to interpret without further studies. However, we could also hypothesize that in some cases, the silence may conceal fear of detachment, and verbalizing that fear could render the bearer of the fear somehow vulnerable.

Recognizing contextual limitations, we could observe existing perceptions and values in the wolf's broader range (e.g. other Swiss cantons, France, Italy, Germany, the USA, Canada) as an approximation to potential silence in Beverin. For example, we did not observe comments on the instrumental value or disvalue of the ecotourism potential of the wolf, which has been observed in other alpine regions in Europe (Bele et al. 2022). Similarly, we did not hear the discussion of non-lethal methods to control the wolf in Beverin (intrinsic value), as discussed in the context of other countries (Hayes et al. 2003, Shivik et al. 2003, Bruns et al. 2020, Macon 2020, Bogezi et al. 2021). A few Swiss regions have seen specific cases of non-lethal measures where lynx and wolves exist. In these regions volunteers have been trained to support livestock farmers to monitor flocks in alpine pasture summering areas (Oppal 2023). However, in our study, participants did not put forward these types of human–wolf measures when asked about the wolf, or spontaneously.

It would be careless to equate non-value with silence, as it would be careless not to 'hear' the silence and try to understand it. For example, one could interpret participants not wanting to talk about the wolf in a semi-public heterogenous focus group discussion as a strong wish to maintain community cohesion. Furthermore, silence may be used as a way not to hurt someone else, or because in one's perception their opinion is not valued and worthless to bring a solution (Dyne et al. 2003, Milliken and Morrison 2003). Silence could also lead to value creation or intimidation and value claiming (Curhan et al. 2022). Overall, there is a need for further research on understanding silence in human–wolf interactions and nature's values in general (e.g. to what extent does silence occur in the social value of the wolf? Could dissonance be the reason for silence? Is silence the product of 'wolf fatigue'? Is silence the result of a non-value?). So, how could researchers identify values in silence? First, by acknowledging that silence might contain a value as well. Second, by designing techniques to capture underlying values in silence. Researchers and practitioners can create settings that allow people or participants to feel comfortable speaking up about important issues or concerns (Piderit and Ashford 2003). A concrete example, like SpeakUp technology, is used to reduce intimidation felt by audience size and increase anonymity in the classroom (Holzer et al. 2013). Furthermore, ensuring that focus groups have a homogenous composition related to the issue being discussed is essential (Woźniak 2014, Roller and Lavrakas 2020).

As Manfredo et al. (2016) already concluded, there is a need to understand how values work: a system view of values, and existing value structures, are relevant for new conservation strategies. We propose to understand the universe of value perceptions, types, and their expression in such a systemic, dynamic view. Only once we know this universe of values and their expression, or silence, can we move towards transformative conservation strategies including different value systems, especially in the case of sensitive conservation issues.

Table 3. Matrix showing the possible combinations of value perceptions, value perspectives, and value expressions, and their research state in the literature we reviewed. (Note: we exclude the not-perceived values.)

	Value perspective (contextual or specific values)	Value expression (positive, neutral, negative)		Values not expressed (Silence)
		Explicit	Implicit	
Value perception	Instrumental, relational, intrinsic No-value	Mostly researched Understudied	Understudied Research gap	Research gap

Amplification of discourses and 'wolf fatigue' as potential silencing factor

The role of news media as a political battlefield or public space seemingly extends to the wolf topic. When comparing the prominence and frequency of wolf perceptions and discourses coming from the news media analysis vis-à-vis the survey, we noted an amplification. Frequency of wolf discourses in the media was 19% higher compared to survey responses. Questions resulted from this seeming intensification. For example, could 'pro-wolf' or 'pro-rural' organizations with specific tendencies on wolf topics be using the media to further their cause? Are federal institutions trying to balance negative or positive discourses with neutral information?

The media and how it depicts a topic can influence individuals' attitudes towards it (McCombs and Shaw 1972). In Germany, a recent study found fluctuating prominence and frequency on how the media covers the wolf discourse. The results pointed to the media leaning towards reporting the wolf in a factual, neutral manner, with two exceptions for conservative media companies. The researchers showed a contradiction in the observation of readers' comments who perceived the media reports were biased in favor of the wolf (Zscheischler and Friedrich 2022). Also in Germany, previous research found that negative perceptions were linked to information coming from newspapers or TV, while positive attitudes towards wolves were linked to information from films, books, and other positively presented scientific data (Arbieu et al. 2019). In Spain, a study (Delibes-Mateos 2020) registered differences in regional media treatment of the wolf. In areas recently recolonized by the wolf, where regulations protect the wolf, and conflict between livestock farmers and wolf is rampant, media articles tended to focus on relational conflicts between the wolf and livestock/livestock farmers. In areas of long-time wolf presence and where wolves are considered to be a 'game species', however, media articles were more diverse, also addressing conservation or hunting. In our case, the majority of sentences in news articles remained neutral. However, in contrast to the case in Germany, the way the Swiss media dealt with the wolf topic was slightly more inclined to negative feelings, and similar to recently wolf-colonized areas in Spain. In the USA, the media articles post-wolf reintroduction (1995) and post-delisting of wolves from the U.S. Endangered Species Act (2009) differed significantly. There, local journalists reported more on aspects related to human–wolf conflicts while articles reported by national outlets wrote more on wolf policy, biological status, and characteristics (Killion et al. 2018). However, because of their research objectives, all these studies omitted any discussion concerning the prominence of wolf discourse in comparison with results on frequency of respondents obtained from other methods (e.g. surveys). By comparing the news media analysis with the survey, we are providing current evidence concerning the (prevalent) amplification of content and opinions in wolf discourses in the region.

The media's place in promoting wolf conservation and wolf–human relations has previously been identified (Delibes-Mateos 2020). However, promoting wolf conservation values towards coexistence or away from it could produce unwanted effects. Morris et al. (2019) found that providing people with informational discourses, instead of providing no information on environmental issues, reduced people's inclination to act. Similarly, we observed 'wolf fatigue', something unreported in human–wolf literature. Recent research on the media and 'issue fatigue' (Gurr et al. 2022) may explain 'wolf fatigue' in our context. Simply, Gurr et al. (2022) defines 'issue fatigue' as the fatigue from ongoing political issues in the news. A negative reaction appears in users when the news media extensively covers an issue for several months or longer. Overexposing people to a topic affects them negatively, both cognitively and emotionally. It is not that the importance of the issue for the media user decreases, but users develop specific 'cognitions, emotions and behaviors regarding the issue' (Gurr et al. 2022, p. 28), which in turn will put into place avoidance strategies when selecting news media. Overexposure would even negatively affect media outlets, as users would provide an overall negative evaluation of their news coverage and the media's performance (Gurr et al. 2022). Besides a possible feeling of being overwhelmed by the presence of the wolf topic, we observed that avoiding this loaded topic can be a strategy to foster amicable interactions and cohesion among community members. This becomes even more apparent when considering our study area comprising small-scale and closely knit alpine communities where collaboration is a necessity. We propose that future research should examine and confirm the existence and extent of 'wolf fatigue', and the links between 'wolf fatigue', silence, and community characteristics to better understand these interactions. For example, potential research questions that could guide the study of 'wolf fatigue' may include: to what extent there is fatigue in the discussion of the wolf in the region? What are the main drivers of 'wolf fatigue'? Could demographic characteristics of residents explain 'wolf fatigue'? Quantitative and qualitative methods may be employed to answer these questions.

Methodological considerations

Silence produced by the methods

A challenge exists when relevant methods remain silent when trying to capture wolf perceptions and values. At least three of the four methods (survey, go-along interviews, and media analysis) captured the wolf discourse, values, or perceptions even when not directly researching the wolf. The focus group only captured the wolf when the researchers asked a direct question. However, people were uncomfortable speaking and sharing opinions about the wolf in a group to the point of avoiding it altogether. Even though it is a sensitive topic, we still expected to find perceptions even in the absence of direct questions. We did not expect that, through the use of the focus group method, we would not hear or get any discussions about the wolf. In this context the focus group method remained 'silent'. In the case of the wolf, vulnerability and fear of detachment may be the most probable causes of silence during the focus group discussion. If asked directly

about the wolf, some participants may interpret it as an intrusive political question, threatening social connections since answers might reveal political tendencies.

In general, conservation science is still hesitant to include sensitive issues in surveys (Nuno and St. John 2015) and other research tools. In contrast, psychology and the health sciences showcase a large body of research analyzing very sensitive topics (Warner 1965, Miller 1985, Le et al. 2023). Some of these techniques have been introduced to conservation science, such as randomized response techniques (RRTs) (Warner 1965, Le et al. 2023) and the nominative technique (Miller 1985). These techniques have been used to obtain responses to contentious and sensitive topics; for example, to understand the prevalence of poaching of a threatened species (Ibbett et al. 2021) or consuming wildlife parts in a small community (Davis et al. 2022). Overall, to address sensitivity, scholars recommend first identifying how sensitive the topic is, which one could do through focus groups and key informant interviews, and then understand the prevalence, the rarity, or commonality of the topic. RRTs are especially adequate for larger samples, whereas smaller samples (200 or less) call for the use of mixed methods including qualitative approaches (Ibbett et al. 2021).

Group discussions and dynamics with participants from different backgrounds, values, and attitudes become key for problem solving (Maciejovsky and Budescu 2007). They help participants to become less oppositional when encountering arguments challenging their own (Mercier and Sperber 2011, 2017), and are a conducive way to share evidence for decision making in conservation. Discussions among like-minded participants foster group thinking, limiting the power of argumentation and reasoning seen in heterogeneous groups (Henriques 2020). Bringing stakeholders together for group discussions in a context of 'wolf fatigue' and silence will require creativity and potentially a change in the ways the wolf and the human–wolf interaction have been discussed in the region. In particular, there is a need for spending more time on trust building to create a 'safe space' to share opinions and perceptions. For this, methods like storytelling might help to include individuals and listen out for unheard voices (Shenk et al. 2023). Thus, researchers need to tailor these and other methods to allow for addressing sensitive topics and including diverse values.

Our experience with the triangulation protocol

In our example of the wolf, the use of individual methods would have revealed an amplification (news media analysis) or masking (focus groups) of the wolf discourses in our study region. Only once we considered all the results in light of the methods' limitations and strengths, as well in the regional and broader context, were we able to obtain a clearer picture of social values influencing wolf perceptions and their expression or silence in Beverin.

Implementing the triangulation protocol was a learning process that required the collaboration of researchers in identifying and sorting social values, not only because of different worldviews, but also because sorting requires considerable understanding of the empirical and theoretical underpinnings and characteristics of social values/disvalues. Filling the convergence table required constant attention between what the convergence is about, but also the limitations and epistemology of each method. This becomes more evident when one includes quantitative and qualitative methods. Once we completed both tables (sorting and convergence), and agreed on the results, assurance prevailed for the follow-up steps. We cannot underestimate the informal feedback on the entire manuscript provided by an expert nature value reviewer.

This research contributes empirically and methodologically to advancement in the assessment of the social values and perceptions of nature with the systematic integration and triangulation of results emerging from different methods, and with the adaptation and application of a simple triangulation protocol used in the health sciences. We urge other researchers who use mixed methods to study the social values and perceptions of nature to use such tools to render the integration of results systematically more robust and comprehensible.

Originally, we did not design and use the methods in the initial study to research about wolf perceptions and social value. Since our research questions originated from the analysis under other research objectives, our study asked limited explicit questions directed towards wolf discourses to only one of the groups in the focus groups, and at the end of the formal segment of the workshop, and in two interviews. Omitting explicit wolf questions helped us analyze the power of each method to collect perceptions and values about what is important to people without any preconception or guidance from the researchers. Therefore, the existence and frequency of wolf perceptions and opinions can already provide relevant information. However, by not asking any explicit and direct question about the wolf, we limited the depth of potential findings per method and overall. Furthermore, the fact that we had heterogeneous discussion groups might have made it less likely that participants would raise the topic. However, focus groups are ideal to expose exiting values and perceptions of the wolf in a group and in stakeholders, and provide baseline information to further studies through other methods (Clark 1994).

Conclusions

The social values of wolves are mostly silent. Potential motives to remain silent could be due to fear or to support community cohesion. The conservation field requires additional studies to reveal the role of silence in expressing the social values of the wolf and of nature in general. Considering our research limitations, we also observed an adverseness of the wolf discussion developing in focus groups, even though group discussions are one of the main methods recommended to unveil the prominence and characteristics of sensitive topics. When people in the region are not discussing wolf opinions in a semi-public setting, this may hinder wolf management that respects diverse local values. In addition, if several individuals remain silent about the wolf, any group discussion may be steered by unilateral agendas with strong voices instead of a constellation of values. Therefore, we question

the efficacy of efforts that exclude these underlying elements bringing silence to values. To add to the general challenge and viable solutions, we identified the expected amplification of wolf discourses in the news media and its potential link to a nascent 'wolf fatigue' in the region, and the possible role they are playing in a 'wolf silence'. We recommend studying these potential phenomena to be able to navigate silence in discussions, (skewed) amplification of voices and discourses, and 'wolf fatigue'. The application of different methods supplied a wealth of information on the particular topic we set to analyze but not directly and originally planned to study. It was, therefore, critical to understand the issue from different perspectives. The use of these methods and a triangulation protocol to reveal the social values, perceptions, and discourses connected to the wolf proved more helpful to understand a sensitive topic that a method may be amplifying or masking (silencing). We show the importance of acknowledging silence in human–wildlife discussions, which should inform policy, management, and communication strategies. Our findings stress the importance of illuminating silence as a way to capture unheard or suppressed social values, which is vital to push for transformative change in nature conservation.

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Permits – In Switzerland, projects unrelated to health (and hence not subject to the Federal law on research on human beings (LRH)), such as the present research, are not required to be approved by an ethics committee. All participants gave prior, informed consent, as per established principles in the Swiss Data Protection Act of 1992, and confirmed they were 18 years of age or older.

Author contributions

Marina Cracco: Conceptualization (lead); Data curation (equal); Formal analysis (lead); Funding acquisition (equal); Investigation (lead); Methodology (lead); Project administration (lead); Validation (lead); Visualization (lead); Writing – original draft (lead); Writing – review and editing (lead). **Annina H. Michel**: Conceptualization (equal); Data curation (equal); Formal analysis (equal); Funding acquisition (equal); Investigation (equal); Methodology (equal); Validation (equal); Writing – original draft (equal); Writing – review and editing (equal). **Franziska Komossa**: Conceptualization (equal); Data curation (equal); Formal analysis (equal); Investigation (equal); Methodology (equal); Validation (equal); Visualization (supporting); Writing – original draft (equal); Writing – review and editing (equal). **Inhye Kong**: Conceptualization (equal); Data curation (equal); Formal analysis (equal); Investigation (equal); Methodology (equal); Validation (equal); Writing – original draft (equal); Writing – review and editing- (equal). **Norman Backhaus**: Funding acquisition (equal); Supervision (supporting); Validation (equal); Writing – review and editing (equal). **Lucia Thaler**: Data curation (equal); Formal analysis (supporting); Investigation (supporting); Validation (equal); Writing – original draft (equal); Writing – review and editing (supporting). **Timo Oliveri**: Data curation (equal); Validation (supporting); Writing – review and editing (supporting). **Gretchen Walters**: Conceptualization (equal); Formal analysis (supporting); Funding acquisition (equal); Supervision (lead); Validation (equal); Writing – review and editing (equal).

Data availability statement

Privacy constraints prevent us from providing details that would reveal the identity of interviewees.

Supporting information

The Supporting information associated with this article is available with the online version.

References

Acheson, K. 2008. Silence as gesture: rethinking the nature of communicative silences. – Commun. Theor. 18: 535–555.
AJF GR. 2020. Wölfe im Kanton Graubünden 2019: erfahrungen des Amtes für Jagd und Fischerei (AJF) im Jahre 2019. – https://chwolf.org/assets/documents/News-Events-Aktuell/2020/MM-KtGR_Jahresbericht-Wolf-GR-2019.pdf.
AJF GR. 2022. Quartalsbericht Grossraubtiere. – https://www.gr.ch/DE/institutionen/verwaltung/diem/ajf/grossraubtiere/publ/Documents/Quartalsbericht%2034_2022%20korrigiert.pdf.
AJF GR. 2023. Quartalsbericht Grossraubtiere. – https://www.gr.ch/DE/institutionen/verwaltung/diem/ajf/grossraubtiere/Documents/Merkbl%C3%A4tter,%20Publikationen,%20Projekte/Quartalsbericht%20Grossraubtiere%20GR%2003_2023.pdf.
Anderson, C. B., Athayde, S., Raymond, C. M., Vatn, A., Arias-Arévalo, P., Gould, R. K., Kenter, J., Muraca, B., Sachdeva, S., Samakov, A., Zent, E., Lenzi, D., Murali, R., Amin, A. and Cantú-Fernández, M. 2022. Conceptualizing the diverse values of nature and their contributions to people. Chapter 2. – In: Balvanera, P., Pascual, U., Christie, M., Baptiste, B. and González-Jiménez, D. (eds), Methodological assessment report on the diverse values and valuation of nature of the intergovernmental science-policy platform on biodiversity and ecosystem services. IPBES secretariat.
Anderson, R. M. 2021. Killing for the common good? The (bio) politics of wolf management in Washington State. – Elem. Sci. Anthropocene 9, 00179.
Arbieu, U., Mehring, M., Bunnefeld, N., Kaczensky, P., Reinhardt, I., Ansorge, H., Böhning-Gaese, K., Glikman, J. A., Kluth, G.,

Nowak, C. and Müller, T. 2019. Attitudes towards returning wolves (*Canis lupus*) in Germany: exposure, information sources and trust matter. – Biol. Conserv. 234: 202–210.
Arias-Arévalo, P., Martín-López, B. and Gómez-Baggethun, E. 2017. Exploring intrinsic, instrumental, and relational values for sustainable management of social-ecological systems. – Ecol. Soc. 22: 43.
Barton, D. N., Chaplin-Kramer, R., Lazos Chavero, E., Van Noordwijk, M., Engel, S., Girvan, A., Hahn, T., Leimona, B., Lele, S., Muradian, R., Niamir, A., Özkaynak, B., Pawlowska-Mainville, A., Ungar, P., Nelson, S., Aydin, C. I., Iranah, P., Cantú-Fernández, M. and González-Jiménez, D. 2022. Value expression in decision-making. Chapter 4. – In: Balvanera, P., Pascual, U., Christie, M., Baptiste, B. and González-Jiménez, D. (eds), Methodological assessment report on the diverse values and valuation of nature of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. IPBES Secretariat, pp. 252–345.
Baulcomb, C., Fletcher, R., Lewis, A., Akoglu, E., Robinson, L., von Almen, A., Hussain, S. and Glenk, K. 2015. A pathway to identifying and valuing cultural ecosystem services: an application to marine food webs. – Ecosyst. Serv. 11: 128–139.
Beeman, W. O. 2005. Silence in music. – In: Achino-Loeb, M. L. (ed.), Silence: the currency of power. Berghahn Books, pp. 23–34, https://www.academia.edu/6834511/Silence_in_Music.
Bele, B., Skrbinšek, T., Ambrogini, C., Berzins, R., Chioso, C., Faure, N., Gambini, I., Knauer, F., Kuralt, Ž., Majić Skrbinšek, A., Mavec, M., Minola, L., Potočnik, H., Rossi, E., Ruco, V., Simon, R. N., Trombin, J., Vettorazzo, E. and Walter, T. 2022. Public attitudes toward wolves and wolf conservation in Austrian, French, Italian and Slovenian Alps. Assessment of attitudes and perceptions about wolves among general public and key stakeholder groups. – Technical report, Project LIFE 18 NAT/IT/000972 WOLFALPS EU.
Bergeron, J., Paquette, S. and Poullaouec-Gonidec, P. 2014. Uncovering landscape values and micro-geographies of meanings with the go-along method. – Landsc. Urban Plan. 122: 108–121.
Bogezi, C., van Eeden, L. M., Wirsing, A. J. and Marzluff, J. M. 2021. Ranchers' perspectives on participating in non-lethal wolf-livestock coexistence strategies. – Front. Conserv. Sci. 2: 683732.
Bowen, F. and Blackmon, K. 2003. Spirals of silence: the dynamic effects of diversity on organizational voice. – J. Manage. Stud. 40: 1393–1417.
Breitenmoser, U. 1998. Large predators in the Alps: the fall and rise of man's competitors. – Biol. Conserv. 83: 279–289.
Breitenmoser, U. and Breitenmoser-Würsten, C. 2001. Die ökologischen und anthropogenen Voraussetzungen für die Existenz grosser Beutegreifer in der Kulturlandschaft. – For. Snow Landsc. Res. 76: 23–39.
Bruns, A., Waltert, M. and Khorozyan, I. 2020. The effectiveness of livestock protection measures against wolves (*Canis lupus*) and implications for their co-existence with humans. – Global Ecol. Conserv. 21: e00868.
Calvet-Mir, L., Gómez-Baggethun, E. and Reyes-García, V. 2012. Beyond food production: ecosystem services provided by home gardens. A case study in Vall Fosca, Catalan Pyrenees, northeastern Spain. – Ecol. Econ. 74: 153–160.
Canton Grison n.d. Kanton reicht Sammelgesuch zur proaktiven Wolfsregulation ein. – https://www.gr.ch/DE/Medien/Mitteilungen/MMStaka/2023/Seiten/2023110701.aspx.
Carson, R. 1962. Silent spring. – Houghton Mifflin.
Chan, K. M. A., Satterfield, T. and Goldstein, J. 2012. Rethinking ecosystem services to better address and navigate cultural values. – Ecol. Econ. 74: 8–18.
Chan, K. M. A. et al. 2016. Opinion: why protect nature? Rethinking values and the environment. – Proc. Natl Acad. Sci. USA 113: 1462–1465.
Chan, K. M., Gould, R. K. and Pascual, U. 2018. Editorial overview: relational values: what are they, and what's the fuss about? – Curr. Opin. Environ. Sustain. 35: A1–A7.
Chapman, M. and Deplazes-Zemp, A. 2023. 'I owe it to the animals': the bidirectionality of Swiss Alpine farmers' relational values. – People Nat. 5: 147–161.
Chapman, M., Satterfield, T. and Chan, K. M. A. 2019. When value conflicts are barriers: can relational values help explain farmer participation in conservation incentive programs? – Land Use Policy 82: 464–475.
Cheng, X., Van Damme, S., Li, L. and Uyttenhove, P. 2019. Evaluation of cultural ecosystem services: a review of methods. – Ecosyst. Serv. 37: 100925.
Clair, R. P. 1998. Organizing silence: a world of possibilities, Vol. xvii. – State Univ. of New York Press.
Clark, B. N. 1994. Focus group interviewing for human dimensions of wildlife research. – Proc. Annual Conf. Southeast Assoc. of Fish and Wildlife Agencies 48: 604–611.
Coldwell, M. 2019. Reconsidering context: six underlying features of context to improve learning from evaluation. – Evaluation 25: 99–117.
Cortini, M. 2001. Silence as a tool for the negotiation of sense in multi-parties conversations. – In: Weigand, E. and Dascal, M. (eds), Negotiation and power in dialogic interaction. John Benjamins Publ. Co., pp. 167–180.
Creed, W. E. D. 2003. Voice lessons: tempered radicalism and the use of voice and silence. – J. Manage. Stud. 40: 1503–1536.
Curhan, J. R., Overbeck, J. R., Cho, Y., Zhang, T. and Yang, Y. 2022. Silence is golden: extended silence, deliberative mindset, and value creation in negotiation. – J. Appl. Psychol. 107: 78–94.
Davis, E. O., Crudge, B. and Glikman, J. A. 2022. The nominative technique: a simple tool for assessing illegal wildlife consumption. – Oryx 56: 284–287.
Delibes-Mateos, M. 2020. Wolf media coverage in the region of Castilla y León (Spain): variations over time and in two contrasting socio-ecological settings. – Animals 10: 736.
Denham, M. A. and Onwuegbuzie, A. J. 2013. Beyond words: using nonverbal communication data in research to enhance thick description and interpretation. – Int. J. Qual. Methods 12: 670–696.
Dénommé-Welch, S. and Rowsell, J. 2017. Epistemologies of silence. – Brock Educ. J. 27: 10–25.
Denzin, N. K. 1978. Sociological methods: a sourcebook. – Routledge.
Deplazes-Zemp, A. and Chapman, M. 2020. The ABCs of relational values: environmental values that include aspects of both intrinsic and instrumental valuing. – Environ. Values 30: 669–693.
Díaz, S. et al. 2015. The IPBES conceptual framework—connecting nature and people. – Curr. Opin. Environ. Sustain. 14: 1–16.
Dudley, N. 2008. Guidelines for applying protected area management categories. – IUCN.
Dufresnes, C., Miquel, C., Taberlet, P. and Fumagalli, L. 2019. Last but not beast: the fall of the Alpine wolves told by historical DNA. – Mamm. Res. 64: 595–600.
Dyne, L. V., Ang, S. and Botero, I. C. 2003. Conceptualizing employee silence and employee voice as multidimensional constructs. – J. Manage. Stud. 40: 1359–1392.

Elo, S. and Kyngäs, H. 2008. The qualitative content analysis process. – J. Adv. Nurs. 62: 107–115.
Farmer, T., Robinson, K., Elliott, S. J. and Eyles, J. 2006. Developing and implementing a triangulation protocol for qualitative health research. – Qual. Health Res. 16: 377–394.
Festinger, L. 1962. A theory of cognitive dissonance. – Stanford Univ. Press.
Fielding, N. and Fielding, J. L. 1986. Linking data. – SAGE Publications.
Fitzpatrick, J. L. 2012. An introduction to context and its role in evaluation practice. – New Dir. Eval. 2012: 7–24.
Frank, B. 2016. Human–wildlife conflicts and the need to include tolerance and coexistence: an introductory comment. – Soc. Nat. Resour. 29: 738–743.
Frank, E. and Heinzer, N. 2019. Im Schatten des Wolfes wird Gesellschaft ausgehandelt. – higgs, https://www.higgs.ch/im-schatten-des-wolfes-wird-gesellschaft-ausgehandelt/20288/.
Fulton, D. C., Manfredo, M. J. and Lipscomb, J. 1996. Wildlife value orientations: a conceptual and measurement approach. – Hum. Dimen. Wildl. 1: 24–47.
Fumagalli, L. 2021. Übersichtsliste aller in der Schweiz genetisch nachgewiesenen Wölfe seit 1998 [Stand Stand 13.10.2021 (Datum der Genotypisierung), Datum = Sammeldatum der Probe, Rot unterlegt = tote Wölfe]. – UNIL, https://infoplattform-grossraubtiere.ch/wp-content/uploads/2020/10/2020_Uebersichtstabelle_Genetisch_nachgewiesene_Woelfe_Stand_15.07.2020.pdf.
García-Llorente, M., Martín-López, B., Iniesta-Arandia, I., López-Santiago, C. A., Aguilera, P. A. and Montes, C. 2012. The role of multi-functionality in social preferences toward semi-arid rural landscapes: an ecosystem service approach. – Environ. Sci. Policy: 136–146.
Gilbert, J. H., David, P., Price, M. W. and Oren, J. 2022. Ojibwe perspectives toward proper wolf stewardship and Wisconsin's February 2021 wolf hunting season. – Front. Ecol. Evol. 10: article 782840.
Gurr, G., Schumann, C. and Metag, J. 2022. Negative effects of long-lasting media attention to public issues on recipients: conceptualizing issue fatigue. – Stud. Commun. Sci. 22: 2.
Hansen, A., Cottle, S., Negrine, R. and Newbold, C. 1998. Mass communication research methods. – NYU Press, https://nyupress.org/9780814735725/mass-communication-research-methods.
Hayes, R. D., Farnell, R., Ward, R. M. P., Carey, J., Dehn, M., Kuzyk, G. W., Baer, A. M., Gardner, C. L. and O'Donoghue, M. 2003. Experimental reduction of wolves in the Yukon: ungulate responses and management implications. – Wildl. Monogr. 152: 1–35.
Hein, J. R., Evans, J. and Jones, P. 2008. Mobile methodologies: theory, technology and practice. – Geogr. Compass 2: 1266–1285.
Heinzer, N. 2021. In which direction does Switzerland really want to go now? Future visions and models of society in the context of the Swiss wolf debates. – J. Eur. Ethnol. Cult. Anal. 6: 71–89.
Hennink, M. and Kaiser, B. N. 2022. Sample sizes for saturation in qualitative research: a systematic review of empirical tests. – Soc. Sci. Med. 292: 114523.
Henriques, G. 2020. Groupthink and the evolution of reason giving. – In: Allen, D. M. and Howell, J. W. (eds), Groupthink in science: greed, pathological altruism, ideology, competition, and culture. Springer, pp. 15–25.
Himes, A. and Muraca, B. 2018. Relational values: the key to pluralistic valuation of ecosystem services. – Curr. Opin. Environ. Sustain. 35: 1–7.
Hoelle, J., Gould, R. K. and Tauro, A. 2022. Beyond 'desirable' values: expanding relational values research to reflect the diversity of human–nature relationships. – People Nat. 5: 1774–1785.
Holzer, A., Govaerts, S., Ondrus, J., Vozniuk, A., Rigaud, D., Garbinato, B. and Gillet, D. 2013. SpeakUp – a mobile app facilitating audience interaction. – In: Wang, J .F. and Lau, R. (eds), Advances in web-based learning – ICWL 2013. Lecture notes in computer science, vol. 8167. Springer, https://doi.org/10.1007/978-3-642-41175-5_2.
Ibbett, H., Jones, J. P. G. and St John, F. A. V. 2021. Asking sensitive questions in conservation using randomised response techniques. – Biol. Conserv. 260: 109191.
Inglis, D. and Pascual, U. 2023. On the links between nature's values and language. – People Nat. 5: 326–342.
IPBES 2017. Nature's contributions to people_2. – IPBES Secretariat Glossary, https://ipbes.net/glossary/natures-contributions-people.
IPBES 2018. Summary for policymakers of the regional assessment report on biodiversity and ecosystem services for Europe and Central Asia of the intergovernmental science - policy platform on biodiversity and ecosystem services (Fischer, M., Rounsevell, M. and Torre-Mari, A., eds). – IPBES Secretariat, https://www.researchgate.net/publication/327384698_Summary_for_policymakers_of_the_regional_assessment_report_on_biodiversity_and_ecosystem_services_for_Europe_and_Central_Asia_of_the_Intergovernmental_Science-Policy_Platform_on_Biodiversity_and_Ecosy.
IPBES n.d. Value expression. – IPBES Secretariat, https://www.ipbes.net/glossary-tag/value-expression.
Jacobs, S. et al. 2016. A new valuation school: integrating diverse values of nature in resource and land use decisions. – Ecosyst. Serv. 22: 213–220.
Jeffres, L. W., Neuendorf, K. A. and Atkin, D. 1999. Spirals of silence: expressing opinions when the climate of opinion is unambiguous. – Pol. Commun. 16: 115–131.
Jürgens, U. M., Grinko, M., Szameitat, A., Hieber, L., Fischbach, R. and Hunziker, M. 2023. Managing wolves is managing narratives: views of wolves and nature shape people's proposals for navigating human-wolf relations. – Hum. Ecol. 51: 35–57.
Kenter, J. O. et al. 2015. What are shared and social values of ecosystems? – Ecol. Econ. 111: 86–99.
Kielwasser, A. P. and Wolf, M. A. 1992. Mainstream television, adolescent homosexuality, and significant silence. – Crit. Stud. Mass Commun. 9: 350–373.
Killion, A. K., Melvin, T., Lindquist, E. and Carter, N. H. 2018. Tracking a half-century of media reporting on gray wolves. – Conserv. Biol. 33: 645–654.
Kish-Gephart, J. J., Detert, J. R., Treviño, L. K. and Edmondson, A. C. 2009. Silenced by fear: the nature, sources, and consequences of fear at work. – Res. Organ. Behav. 29: 163–193.
Komossa, F., Wartmann, F. M. and Verburg, P. H. 2021. Expanding the toolbox: assessing methods for local outdoor recreation planning. – Landsc. Urban Plan. 212: 104105.
Komossa, F., Kong, I. and Purves, R. S. 2024. What's in the news? Revealing news media discourses for managing Swiss parks of national importance. – Landsc. Res. https://doi.org/10.1080/01426397.2024.2358234.
KORA n.d.-a. Profile wolf. – https://www.kora.ch/en/species/wolf/profile/.
KORA n.d.-b. Wolf. – https://www.kora.ch/en/general/library/wolf.
Le, T.-N., Lee, S.-M., Tran, P.-L. and Li, C.-S. 2023. Randomized response techniques: a systematic review from the pioneering work of Warner (1965) to the present. – Mathematics 11: 7.

Lliso, B., Lenzi, D., Muraca, B., Chan, K. M. and Pascual, U. 2022. Nature's disvalues: what are they and why do they matter? – Curr. Opin. Environ. Sustain. 56: 101173.
Loi sur la chasse, LChP, FF 2019 6267 2019. – https://www.fedlex.admin.ch/eli/fga/2019/2317/fr.
Lynn, W. S. 2007. Wolf recovery. – In: Bekoff, M. (ed.), Encyclopedia of human-animal relationships. Greenwood Press, pp. 812–819.
Mace, G. M., Cramer, W., Díaz, S., Faith, D. P., Larigauderie, A., Le Prestre, P., Palmer, M., Perrings, C., Scholes, R. J., Walpole, M., Walther, B. A., Watson, J. E. and Mooney, H. A. 2010. Biodiversity targets after 2010. – Curr. Opin. Environ. Sustain. 2: 3–8.
Maciejovsky, B. and Budescu, D. V. 2007. Collective induction without cooperation? Learning and knowledge transfer in cooperative groups and competitive auctions. – J. Pers. Soc. Psychol. 92: 854–870.
Macon, D. 2020. Paying for the presence of predators: an evolving approach to compensating ranchers. – Rangelands 42: 43–52.
Macpherson, H. 2016. Walking methods in landscape research: moving bodies, spaces of disclosure and rapport. – Landsc. Res. 41: 425–432.
Madden, F. and McQuinn, B. 2014. Conservation's blind spot: the case for conflict transformation in wildlife conservation. – Biol. Conserv. 178: 97–106.
Manfredo, M. J., Teel, T. L. and Dietsch, A. M. 2016. Implications of human value shift and persistence for biodiversity conservation. – Conservation Biology 30: 287–296.
Manfredo, M. J., Bruskotter, J. T., Teel, T. L., Fulton, D., Schwartz, S. H., Arlinghaus, R., Oishi, S., Uskul, A. K., Redford, K., Kitayama, S. and Sullivan, L. 2017. Why social values cannot be changed for the sake of conservation. – Conserv. Biol. 31: 772–780.
Maxwell, J. A. 2010. Using numbers in qualitative research. – Qual. Inq. 16: 475–482.
Mayring, P. 2014. Qualitative content analysis: theoretical foundation, basic procedures and software solution. – SSOAR.
McCombs, M. E. and Shaw, D. L. 1972. The agenda-setting function of mass media. – Public Opin. Q. 36: 176–187.
McKimmie, B. M. 2017. Cognitive dissonance theory. – In: Zeigler-Hill, V. and Shackelford, T. K. (eds), Encyclopedia of personality and individual differences. Springer International Publishing, pp. 1–9.
Mercier, H. and Sperber, D. 2011. Why do humans reason? Arguments for an argumentative theory. – Behav. Brain Sci. 34: 57–74.
Mercier, H. and Sperber, D. 2017. The enigma of reason, Vol. vi. – Harvard Univ. Press, p. 396.
Michel, A. H. and Backhaus, N. 2019. Unravelling reasons for the non-establishment of protected areas: justification regimes and principles of worth in a Swiss national park project. – Environ. Values 28: 2.
Miller, J. D. 1985. The nominative technique: a new method of estimating heroin prevalence. – In: Rouse, B., Kozel, N. and Richards, L. (eds), Self-report methods of estimating drug use: meeting current challenges to validity. National Institute on Drug Abuse, pp. 104–124.
Milliken, F. J. and Morrison, E. W. 2003. Shades of silence: emerging themes and future directions for research on silence in organizations. – J. Manage. Stud. 40: 1563–1568.
Moon, K. and Blackman, D. 2014. A guide to understanding social science research for natural scientists. – Conserv. Biol. 28: 1167–1177.
Morris, B. S., Chrysochou, P., Christensen, J. D., Orquin, J. L., Barraza, J., Zak, P. J. and Mitkidis, P. 2019. Stories vs. facts: triggering emotion and action-taking on climate change. – Clim. Change 154: 19–36.
Morrison, E. W. and Milliken, F. J. 2000. Organizational silence: a barrier to change and development in a pluralistic world. – Acad. Manage. Rev. 25: 706–725.
Morrison, E. W. and Milliken, F. J. 2003. Speaking up, remaining silent: the dynamics of voice and silence in organizations. – J. Manage. Stud. 40: 1353–1358.
Naturpark Beverin. n.d.-a. Kurzportrait. – https://www.naturpark-beverin.ch/de/naturpark-beverin/parkportrait/portret-curt-digl-parc-natiral-bavregn.
Naturpark Beverin. n.d.-b. Naturpark Beverin Charta. – https://www.naturpark-beverin.ch/de/naturpark-beverin/naturpark-beverin-charta.
Nicholsen, S. W. 2003. The love of nature and the end of the world: the unspoken dimensions of environmental concern. – MIT Press.
Nightingale, A. J. 2015. Adaptive scholarship and situated knowledges? Hybrid methodologies and plural epistemologies in climate change adaptation research. – Area 48: 41–47.
Nuno, A. and St. John, F. A. V. 2015. How to ask sensitive questions in conservation: a review of specialized questioning techniques. – Biol. Conserv. 189: 5–15.
OFEV 2023. Plan loup. – https://www.bafu.admin.ch/dam/bafu/fr/dokumente/biodiversitaet/uv-umwelt-vollzug/konzept_wolf_schweizvollzugshilfe.pdf.download.pdf/plan_loup_aide_alexecution.pdf.
Oppal 2023. Oppal. – https://oppal.ch/en/.
Pascual, U. et al. 2017. Valuing nature's contributions to people: the IPBES approach. – Curr. Opin. Environ. Sustain. 26–27: 7–16.
Pascual, U. et al. 2023. Diverse values of nature for sustainability. – Nature 620: 7975.
Patton, M. Q. 1990. Qualitative research & evaluation methods, 2nd edn. – SAGE Publications.
Patton, M. Q. 1999. Enhancing the quality and credibility of qualitative analysis. – Health Serv. Res. 34: 1189–1208.
Patton, M. Q. 2014. Qualitative research & evaluation methods: integrating theory and practice, 4th edn. – SAGE Publications.
Piderit, S. K. and Ashford, S. J. 2003. Breaking silence: tactical choices women managers make in speaking up about gender-equity issues. – J. Manage. Stud. 40: 1477–1502.
Pratson, D. F., Adams, N. and Gould, R. K. 2023. Relational values of nature in empirical research: a systematic review. – People Nat. 5: 1464–1479.
Reik, T. 1968. The psychological meaning of silence. – Psychoanal. Rev. 55: 172–186.
Remus, R., Quasthoff, U. and Heyer, G. 2010. SentiWS - A publicly available German-language resource for sentiment analysis. – In: Proc Seventh Internat. Conf. on Language Resources and Evaluation (LREC'10). European Language Resources Association (ELRA), https://wortschatz.uni-leipzig.de/de/download.
Roberts, M. E., Stewart, B. M. and Tingley, D. 2019. stm: an R package for structural topic models. – J. Stat. Softw. 91: 1–40.
Roder, S., Biollaz, F., Mettaz, S., Zimmermann, F., Manz, R., Kéry, M., Vignali, S., Fumagalli, L., Arlettaz, R. and Braunisch, V. 2020. Deer density drives habitat use of establishing wolves in the western European Alps. – J. Appl. Ecol. 57: 995–1008.
Roller, M. R. and Lavrakas, P. 2020. Focus groups: heterogeneity vs. homogeneity. – In: Roller, M. R. and Lavrakas, P. (eds), Applied qualitative research design. Guilford Press, pp.

107–109, https://researchdesignreview.com/2020/02/16/focus-groups-heterogeneity-vs-homogeneity/.
Rolston, H. 1992. Disvalues in nature. – Monist 75: 250–278.
Røskaft, E., Bjerke, T., Kaltenborn, B., Linnell, J. D. C. and Andersen, R. 2003. Patterns of self-reported fear towards large carnivores among the Norwegian public. – Evol. Hum. Behav. 24: 184–198.
Schwartz, S. H. 1992. Universals in the content and structure of values: theoretical advances and empirical tests in 20 countries. – In: Zanna, M. P. (ed.), Advances in experimental social psychology, Vol. 25. Academic Press, pp. 1–65.
Schwartz, S. H. 1994. Are there universal aspects in the structure and contents of human values? – J. Soc. Issues 50: 19–45.
Schwartz, S. H. 2012. An overview of the Schwartz theory of basic values. – ORPC 2: 11–20.
Schwartz, S. H. and Bilsky, W. 1987. Toward a universal psychological structure of human values. – J. Pers. Soc. Psychol. 53: 550–562.
Serenari, C. and Taub, M. 2019. Predicting the legitimacy of wolf recovery. – Wildl. Biol. 2019: 1–12.
Shenk, L., Eells, J. and Almitra, W. 2023. Women taking action: multisession learning circles, storytelling, and an ecosystem of relationships for conservation. – J. Soil Water Conserv. 78: 245–259.
Shivik, J. A., Treves, A. and Callahan, P. 2003. Nonlethal techniques for managing predation: primary and secondary repellents. – Conserv. Biol. 17: 1531–1537.
Slagle, K. M., Wilson, R. S., Bruskotter, J. T. and Toman, E. 2019. The symbolic wolf: a construal level theory analysis of the perceptions of wolves in the United States. – Soc. Nat. Resour. 32: 322–337.
SPN n.d.-a. Categories & missions. – https://www.parks.swiss/en/the_swiss_parks/what_is_a_park/categories_missions.php.
SPN n.d.-b. Swiss parks International. – https://www.parks.swiss/en/the_swiss_parks/what_is_a_park/international.php.
Styres, S. 2008. The silent monologue: the voice within the space. – AlterNative 4: 89–101.
Swiss Confederation 2007. SR 451.36 — Ordinance of 7 November 2007 on parks of national importance (Parks Ordinance, ParkO). – https://www.fedlex.admin.ch/eli/cc/2007/743/en.
Teff-Seker, Y., Rasilo, T., Dick, J., Goldsborough, D. and Orenstein, D. E. 2022. What does nature feel like? Using embodied walking interviews to discover cultural ecosystem services. – Ecosyst. Serv. 55: 101425.
Tschofen, B., Heinzer, N. and Frank, E. 2016. Wolfsmanagement als kultureller Prozess. Working Paper zum Symposium Wolfsmanagement: Wissen_Schaft(F)T_Praxis. SNF– Projekt Wölfe: Wissen und Praxis, ISEK – Institut für Sozial anthropologie und Empirische Kulturwissenschaft, Univ. Zürich.
van Eeden, L. M., Rabotyagov, S., Kather, M., Bogezi, C., Wirsing, A. J. and Marzluff, J. 2021. Political affiliation predicts public attitudes toward gray wolf (*Canis lupus*) conservation and management. – Conserv. Sci. Pract. 3: e387.
Warner, S. L. 1965. Randomized response: a survey technique for eliminating evasive answer bias. – J. Am. Stat. Assoc. 60: 63–66.
Weiss, A., Kroeger, T., Haney, J. and Fascione, N. 2007. Social and ecological benefits of restored wolf populations. – Transactions of the 72nd North American Wildlife and Natural Resources Conference, pp. 297–319.
Woźniak, W. 2014. Homogeneity of focus groups as a pathway to successful research findings? Methodological notes from the fieldwork. – Prz. Sociol. Jakościowej. 10: 6–23.
Xin, C., Sylvie, V. D., Luyuan, L. and Pieter, U. 2020. Taking 'social relations' as a cultural ecosystem service: a triangulation approach. – Urban For. Urban Greening 55: 126790.
Zahl-Thanem, A., Burton, R. J. F., Blekesaune, A., Haugen, M. S. and Rønningen, K. 2020. The impact of wolves on psychological distress among farmers in Norway. – J. Rural Stud. 78: 1–11.
Zanni, M., Brogi, R., Merli, E. and Apollonio, M. 2023. The wolf and the city: insights on wolves' conservation in the Anthropocene. – Anim. Conserv. 26: 766–780.
Zimmermann, B., Wabakken, P. and Dötterer, M. 2001. Human-carnivore interactions in Norway: how does the re-appearance of large carnivores affect people's attitudes and levels of fear? – For. Snow Landsc. Res. 76: 137–153.
Zscheischler, J. and Friedrich, J. 2022. The wolf (*Canis lupus*) as a symbol of an urban–rural divide? Results from a media discourse analysis on the human–wolf conflict in Germany. – Environ. Manage. 70: 1051–1065.