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Outdoor recreation and the private forest owner: Place attachment, social values, and public access

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Introduction: The Swedish National Forest Program emphasizes that the forest can be more multifunctional where the values created by human experiences of the forest, i.e., social values, can be used for tourism and outdoor recreation, leading to rural development and sustainable growth. To develop multifunctional forests in this respect, private forest owners' perspectives on development are critically important. For example, the place attachment of the private forest owners affects how they manage their forests. Therefore, it is crucial to consider private forest owners' perspectives when planning land use.

Method: The study area is a region in southwest Sweden (Hallandsås) designated as a national interest area for outdoor recreation. There is interest in expanding and developing nature-based tourism, including trail systems, based on the perception of the areas as having great outdoor recreation value. This article aims to present findings from a study that investigated the potential for outdoor recreation development in the forests of Hallandsås. A questionnaire was sent out to private forest owners, which contained questions about social values, perspectives on the Swedish right of public access, development of outdoor recreation, and place attachment.

Results: The results showed that private forest owners considered health, well-being, and a good living environment the most important social values of their forested lands. The identity and cultural heritage value of private forest lands and the value of working on the land were the second and third most highly identified forest social values. Outdoor recreation was not identified as a top forest social value.

Discussion: The analysis identified seven key factors that must be considered with outdoor recreation development, given concerns and the importance of other forest social values. Careful consideration of these factors and their interactions can provide a path for outdoor recreation development that is respectful to people and places. This consideration is at the core of landscape protection and management as interpreted by the European Landscape Convention. Forest owners' social values are a critical part of landscape quality objectives, along with planning that links public aspirations with landscape character.

KEYWORDS

forest social values, Hallandsås, outdoor recreation, place attachment, private forest owners, the right of public access

1 Introduction

There is a political desire to develop Swedish forests to become more multifunctional (Zhang et al., 2022). Multifunctionality concerning the Swedish forest goes back decades and highlights multiple uses, including timber production, public berry picking, recreational hunting, and a place for outdoor recreation (SOU, 1992). More recently, the multifunctional roles of forests for the economy, climate, rural areas, biodiversity, and human health and well-being were featured in a research call by a Swedish research council for sustainable development (Formas, 2022). As can be inferred from these examples of uses and roles, a vital part of this desired multifunctionality is a deeper consideration of the forest's social values, i.e., those values that people create from experiences in the forest (The Swedish Forest Agency, 2013). Part of the motivation for elevating social values is the possibility of supporting rural development in forested regions of Sweden (Ministry of Trade and Industry, 2018).

The social value of forest-based outdoor recreation is the focus of this study. Sweden is known for its expansive northern boreal forest and associated timber industry; however, this study highlights the southernmost part of Sweden—an area more known for agriculture and relatively high population density. The specific area under consideration in this study is the Hallandsås region, which has been considered a national interest for nature-based outdoor recreation since 1988 (Widerström, 1988). Note that the phrase nature-based outdoor recreation (or simply, *outdoor recreation*) will be used to translate the Swedish word *friluftsliv*; friluftsliv is a Nordic language term with a broader meaning than most English uses of outdoor recreation (Beery, 2013). One motivation behind this investigation is an interest in outdoor recreation participation in Sweden in general while also the increase in outdoor recreation participation was observed during the Covid 19 in Sweden; the increase was noted at local, regional, and national levels (Beery et al., 2021; Hansen et al., 2022).

Another idea requiring translation is the national interest area designation for outdoor recreation. This phrase from national planning in Sweden refers to a contiguous area that authorities have identified as having key attributes for outdoor recreation that need to be prioritized in land use decisions (SEPA, The Swedish Environmental Protection Agency, 2005). Natural and cultural values are included in the valuation process, considering the overall size and extent of human disturbance. A varied landscape, quality access for the public, and opportunity for a diversity of outdoor recreation activities are other factors considered in the national interest area designation (SEPA, The Swedish Environmental Protection Agency, 2005). Specifically, in the Hallandsås area, the following elements have been identified as prerequisites for the preservation and development of the area's outdoor recreation values (as translated from Halland County Administrative Board, 2014):

- Improved trail systems, management of walking trails, signage, information on means of communication.
- New trail development
- Ecotourism development
- Outdoor ethics behavior information provided
- Public transport supported

Beyond the national interest area focus, another driving force in this investigation is small forest ownership. A defining aspect of the Hallandsås region is the broad make-up of forest ownership, literally hundreds of small private forest owners within the national outdoor recreation interest area. Divergent geographical contexts come with different physical and ecological features and unique cultural, economic, and social identities (Bergstén et al., 2018; Leahy & Lyons, 2021). Thus, to develop a multifunctional forest approach in Hallandsås, acknowledging the unique local landscape and forest social values for outdoor recreation, the perspective of the many private forest owners is critical (Ministry of Trade and Industry, 2018).

This paper will attempt to focus on the unique landscape of the Hallandsås region, a place perspective of the private small forest owner regarding forest social values and outdoor recreational development. Specifically, our interest lies in building knowledge regarding the potential to further develop outdoor recreation in Sweden by considering private landowners' social values of the forest. Moreover, we investigate the possible relationships between private forest owner place attachment and the development of outdoor recreation opportunities for the public. In order to address this purpose, three research questions guide the study:

1. What is the private forest owner's perspective on forest social values?
2. What is the relationship between private forest owners' place attachment and forest social values?
3. What is the relationship between private forest owners' place attachment and the development of public outdoor recreation opportunities?

2 Background

2.1 Hallandsås

The national outdoor recreation interest area investigated in this study, Hallandsås, is comprised of 27,250 hectares of forest land in Båstad, Laholm, Ängelholm, and Örkelljunga municipalities in southern Sweden (see Figure 1). In addition to the hundreds of private forest holdings, one finds designated nature reserves and Natura-2000 sites within the area. The region provides suitable terrain for many popular outdoor recreation activities (Halland County Administrative Board, 2014; Skane County Administrative Board, 2017). The outdoor recreation infrastructure consists of forest roads, hiking trails (including two long-distance hiking systems, the Hallandsåsleden and the Skåneleden), firepits, parking lots, windbreaks, and information signs.

2.1.1 Hallandsås is an island

Hallandsås is a unique landscape, and the island metaphor is used based on the European Landscape Convention definition of *landscape*: "Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" (Council of Europe, 2000). The *interaction of natural and/or human factors* in the Hallandsås that

Map created by Frida Johnsson in SWEREF99 TM. Source: GSD-Overview map, vector (2021), Lantmäteriet © (The Land Survey, Sweden), Sweden map 1:5 million, vector (2021), Lantmäteriet ©, shape-file of the outdoor life national interest area, the environmental data portal © Naturvårdsverket (SEPA) (2020), GSD-Property map, vector (2021), Lantmäteriet ©.

FIGURE 1
Map displaying the survey area at Hallandsås.

set it apart from the surrounding area are geological, ecological, and cultural. Hallandsås represents host topography; the horst, defined as a raised elongated block of the earth's crust lying between two faults, stretches in a northwest-southeast direction for 40 kilometers and is 5-10 kilometers wide (Skogen, 2022). The highest point is Högalteknall, 226 meters above sea level (Skogen, 2022). The agricultural landscape largely surrounds this geological formation (See Figure 1).

The cultural landscape also bolsters this descriptive notion of Hallandsås as an island. Numerous examples highlighting its unique cultural landscape contributing to Hallandsås as set apart from its surroundings can be found throughout history. Three examples of this history from three eras, including the Iron Age, the Early Modern Era, and the Modern Era, are provided for a glimpse of this cultural landscape. A rich abundance of relics testifies to a cultural landscape dating back to the bronze age (Carlie et al., 2003; Halland County Administrative Board, 2014). During the Iron Age, population growth occurred in the area, which meant that the land above the highest prehistoric coastline in the forest area became fields and meadows. On Hallandsås, the fields were cleared for new cultivation; in the forest landscape, we can see the historic cultivation mounds and stone walls today (Carlie et al., 2003).

Another example is the use of this region by the Shapphane guerrilla movement of the late 17th century that operated out of the forest horst (raised fault block bounded by normal faults) as a safe or protected area (Rydstad, 2005). Fast forward to the contemporary period, another cultural example of the island idea is the 8.7 km railway tunnel built through the feature, replacing a single-track overland route (Trafikverket, 2013). Building through the Hallandsås was necessary, given that the topography was too winding and steep to allow for double-track railway conversion.

2.2 Swedish forests and social values

In an investigation by the Swedish Forest Agency in 2013, the definition of the forest's social values was presented as: "the values created by human experiences of the forest" (The Swedish Forest Agency, 2013). Several specific values have been developed with the Swedish Forest Agency's definition. The list includes:

- Esthetics
- Experience values (social-natural qualities)
- Health, well-being, and a good living environment
- Identity and cultural heritage
- Intellectual and spiritual inspiration
- Leisure experiences, outdoor recreation, and tourism
- Pedagogy and knowledge of forests and the environment
- Play, togetherness, and social relationships

In the forest landscape, experience values are created by a mix of natural and cultural elements coupled with conditions for outdoor recreation. Further, specific environments in the landscape have different experience values depending on people's perspectives on what is attractive, interesting, or engaging. Hence, a place can have different social values because it is created through people's different environmental perceptions and relationships (The Swedish Forest Agency, 2013). For example, for the forest owner and those who work in the forest, the forest can also be a working landscape; in the literature, a working landscape is described as a "taskscape" (Linné & Sellerberg, 2018). There are, therefore, values for the physical work process in the forest, which means that whoever owns a cultivated forest may have a vision of what a forest should look like and represents the owner's knowledge, values, and work ethic (Linné & Sellerberg, 2018).

In a previous study, Bjärstig and Sténs (2018) investigated how private forest owners perceive the social values of the forest and how private forest landowners look at creating new services and benefits on their property to develop a multifunctional forest. The 57 private forest owners within the Federation of Swedish Farmers were interviewed with forest holdings in large parts of central and northern Sweden, but southern Sweden was not investigated (Bjärstig & Sténs, 2018). Similar to the other studies (Sténs et al., 2016), the forest owner interviews show that recreation and tourism are associated with the forest's social values. Out of nine values, it was shown in the study that the majority of private forest owners associated social values in their forest with *recreation and outdoor life*; nature experiences followed this and in third place was *health, well-being and a good living environment.*

Results from Bjärstig and Sténs (2018) indicate that private forest owners perceive recreation, cultural heritage, and biological diversity as important forest values along with the residential value of the forest (Bjärstig & Sténs, 2018). These results indicate a multifunctional view of the forests, given that none of the participating landowners were exclusively driven by financial gain. Moreover, results indicated specific differences based on gender, indicating that men and women valued the social values of the forest differently. Women valued recreation, health, and conservation of wild nature higher than men, while men more commonly perceived the forest as an economic asset, emphasizing timber production.

With the increased perception that forests should produce more public values, research has shown that private forest owners have different goals with their forests (Karppinen, 1998; Urquhart et al., 2012). In research from Finland, where, among other things, it was investigated which sectors could cooperate with forestry according to

private forest owners, it emerged that 46% mentioned bioenergy, 17% mentioned recreation and education, and 13% mentioned nature tourism (Häyrinen et al., 2017). Research from England shows that twenty-five percent have a multifunctional forest perspective and is positive about public access to social activities in their forest (Urquhart et al., 2012). The fact that some private forest owners see an opportunity to develop recreation and nature tourism contributes to developing social values in the forest (Rodríguez-Piñeros & Mayett-Moreno, 2015).

2.2.1 Place attachment

Simply stated, place attachment is the meaningful connection between people and places. Scanell and Gifford, 2010 provide a more detailed definition with their research: "a bond between an individual or group and a place that can vary in terms of spatial level, degree of specificity, and social or physical features of the place, and is manifested through affective, cognitive, and behavioral psychological processes" (Scanell and Gifford, 2010). This definition gets at the core ideas behind their theoretical model, *The tripartite model for place attachment.* In this model, Scannel and Gifford describe the three key elements of place attachment: *person, place*, and *process*, and provide subcategories for each element. The *person* element is further divided into the *individual* and the *social* attachment to a place. The *individual* aspect here is the potential contribution of place to personal development or association with a personal life event, while *social* attachment refers to potential historical or cultural connections; one's group affiliations may intersect with significant places. The *place* element has two subcategories, *social* and *physical*; the social represents a connection to a place through interactions between individuals and groups. The physical subcategory includes the physical place with its material elements, including potentially important resources. The third element, *process*, describes the psychological interactions between an individual and a group in a meaningful place; the *process* includes the three subcategories of *emotions, behavior, and cognition*. Note, the phrase "sense of place" is another useful place theory idea that is equivalent to *process* in the tripartite model for place attachment (Foote & Azaryahu, 2009).

Boley et al. (2021) describe a useful description of place attachment as a two-dimensional model of place identity and place dependence. Boley et al. (2021) highlight a history of referencing these two concepts as the critical elements of place attachment (Williams & Vaske, 2003; Raymond et al., 2010; Scanell and Gifford, 2010; Lewicka, 2011; Hernández et al., 2020). This history is based on original work developing the two-dimensional place attachment model by Williams and Roggenbuck (1989). This understanding is strengthened by Williams & Vaske, 2003 contention that place attachment is a superordinate concept made up of two essential place bonds, place identity and place dependence. Boley et al. (2021) describe place identity as an emotional or symbolic attachment formed with a place and can serve as a way individuals define themselves. Place identity is directly linked to Scanell and Gifford, 2010 tripartite model for place attachment through the cognitive process involved when an individual creates a bond to a place by identifying herself with the place. Boley et al. (2021) draw upon the history of place literature to describe place dependence as the functional aspect of place attachment, i.e., the ability of a place to provide for an individual's needs or allow for goal achievement (Williams & Vaske, 2003). Within Scanell and Gifford, 2010 tripartite framework, place dependence falls under the physical place dimension of place attachment.

2.2.2 Private forest owners' place attachment

Theoretical explanations for place attachment, such as those of Boley et al. (2021) or Scanell and Gifford, 2010, may help explain how private landowners make decisions regarding their forest lands. For example, the ties formed between a forest owner and a place can affect their behavior, identity, and perception of resource use (Leahy & Lyons, 2021). In a study by Leahy and Lyons (2021) from private forest land in Maine (USA), the influence of place attachment on behavior was investigated. Results showed that most private forest owners are strongly attached to their land and have measurable concerns. Landowners who worked on their land as a primary income source and those who received a part of their income from the forest resources had the highest values in place attachment and concern. These groups valued biological diversity, recreational opportunities, and esthetics while valuing the extraction of natural resources such as firewood and timber. These two groups had the greatest interaction with their land, which created a stronger place connection than the other two groups in the study. The third group valued esthetics and privacy to a greater degree than seeing their land as a way to invest in recreation or timber production. The fourth group had the lowest levels of place attachment and high values on the harvest of timber products; less than half of the landowners in this fourth group lived on their land. The study shows that place attachment is a theory that should be used to gain new perspectives on which factors influence forest owners' decisions (Leahy & Lyons, 2021).

2.2.3 Private forest owners and perception of public use of private land

The perceptions and experiences of private forest owners concerning public use and public planning for recreation and biodiversity on their land were studied by Bergstén et al. (2018). One of the questions in the study was how private forest owners felt if authorities wanted to buy or exchange their forest land for recreation or biodiversity protection. Based on the answers, the results showed three groups, an ambivalent group, a positive group, and a concerned group. The ambivalent group said private forest owners would instead protect land for biodiversity rather than see an increase in people and recreational activities near their properties. The positive group was open to the idea of public use of their land for recreation and nature conservation. A large part of the respondents in this group did not live on forest land. The concerned group did not favor selling, exchanging, or letting authorities use their land. The interviewees lived nearby or on their forest land. They felt that their sense of place, in terms of the private, quiet, peaceful, and harmonious atmosphere, would be threatened if authorities used their land for recreation. This concerned group had strong attachments to parts of the land and felt that no other land could give them the same feeling. These outcomes indicate that social and geographical differences show a diversity of motives among forest owners. It is, therefore, vital that an understanding is created about forest owners' concerns about landscape planning and use of the landscape. If forest owners' social and subjective perceptions of forests are included, the planning process can be perceived as more legitimate for the forest owner (Bergstén et al., 2018).

2.3 Outdoor recreation in Sweden

Outdoor recreation in Sweden is well-established organizationally and institutionally in Sweden. Critical to this study, a key example of this establishment is the noted national interest area for outdoor recreation designation. Moreover, there are many other examples of societal support for outdoor recreation, including documented levels of public participation, government-established goals for outdoor recreation, and an engaged Swedish outdoor recreation research sector (e.g., Friluftsforskning.se). In 2018 it was estimated that approximately one-third of the Swedish population actively engages in outdoor recreation (The Public Health Agency of Sweden, 2018); there is data to support the perception that this percentage has increased during the recent Covid-19 pandemic (Hansen et al., 2022). The fact that these statistics are available is due, in part, to careful monitoring by the noted Swedish outdoor recreation research sector (e.g., Outdoor Recreation in Change and Friluftsforskning.se). Two examples of societal support for outdoor recreation, national goals, and public access (allemansrätt) will be further developed in the following sub-sections, given their importance for this study.

2.3.1 National goals

The Swedish parliament has established ten national goals for outdoor recreation (Ministry of the Environment, 2012), which include a spectrum of outcomes designated by the Swedish EPA. Regarding this current study, most goals consider private landowners' social values of the forest. Further, the relationship between private forest owners, place attachment, and development of outdoor recreation opportunities for the public, also fit the national goals; for example, consider the following seven of the ten Swedish national goals for outdoor recreation:

- Access for all
- Strong engagement for collaboration
- Universal access law (allemansrätt)
- Access to nature for outdoor recreation
- Sustainable regional growth and rural development
- Outdoor recreation for public health
- Good knowledge about outdoor recreation
- (Ministry of the Environment, 2012)

These intertwined goals of access, collaboration, health, education, and sustainable growth help provide a solid foundation for inquiry into forest social values. Moreover, the goals highlight the importance of forest social values to the national objectives specified by the Swedish Parliament. One of the national goals listed above has special significance for this study, allemansrätt. Allemansrätt translates to the phrase, *the right of public access*, or is often referred to as universal access laws and traditions. Functionally, allemansrätt provides public access to private property in Sweden, making it of particular interest for this study.

2.3.2 Allemansrätt

While allemansrätt guidelines for specific activities exist, they are best captured by the guiding ethic used by the Swedish Environmental Protection Agency, summarizing allemansrätt: *Don't disturb, don't destroy* (Visit Sweden, 2021). Allemansrätt traditions go back over the past century and are based on a much longer social-ecological history (Beery, 2018). National survey results in Sweden consistently show broad-based and consistent support for allemansrätt (Fredman et al., 2013; Fredman et al., 2019). This support has also been documented at the level of the private landowner. Results from Campion and Stephenson (2013) indicated positive support for allemansrätt and believed that it is a system worth keeping in Sweden; specifically, private property landowners expressed the idea that public access could be balanced with the economic use of their land. Similarly, Bergstén et al. (2018) noted the private forest landowner sentiment that access is important for public use; most of the participants in that study reported acceptance of public access to their private forest lands for "walks, picnics, berry and mushroom picking, as well as for recreation activities".

Along with support for access rights, previous research has documented challenges to public access, for example, public encroachment on private home spaces through inappropriate car parking or trespassing across private yards. Further, there has also been documentation of trespassing in agricultural areas, inappropriate use of forest resources, and littering (Campion & Stephenson, 2013). In the study by Bergstén et al. (2018), there were more challenges for the forest owners in southern Sweden who were closer to densely populated areas than the investigated area in northern Sweden; southern forest landowners experienced more damage to their land in the form of litter and fires. The challenge with public access increased when there was more regular use of the same area and motor vehicles were involved; moreover, the landowners felt that large groups engaged in mountain biking and horse riding caused high wear and tear (Campion & Stephenson, 2013). Similarly, mountain biking has been identified as a concern by forest landowners in other sites in southern Sweden proximate to areas of population density (Haupt, 2018; Wallström, 2018).

Recently, allemansrätt on private lands was tested during the Covid-19 pandemic, given increased outdoor recreation participation in Sweden (Hansen et al., 2022). This increased outdoor recreation participation highlighted calls for a greater understanding of public outdoor ethics (Beery et al., 2021). Overall, Covid-19 created a situation where expanded outdoor recreation participation highlighted access needs, education needs, and public concerns about private property access (Beery et al., 2021). According to local news outlet discussions in Sweden, this potential for conflict between allemansrätt and private forest landowners' rights has become tangible and discussed during Covid-19 (e.g., Smålands Tidning, 2020).

3 Method

A description of participant selection and limitations to this selection, the ethics considered in the research process, and the questionnaire design are presented in the following sections.

3.1 Limitation and selection

A survey was developed to collect data from Hallandsås private forest owners regarding potential connection or relationship to their

forest land, perception of the forest's social values, perspective on the right of public access, and interest in the outdoor recreation development (commercial and non-commercial). The survey area was geographically limited to private forest owners within the Hallandsås area of national interest for outdoor recreation. Lantmäteriet, a Swedish government agency that provides information on Swedish geography and property, provided contact information to private forest owners for this survey based on a shapefile created in ArcGIS Pro. The shapefile was edited to avoid including forest land outside the national interest area. The file included contact information containing addresses of private lawful forest owners. The total number of private forest owners was 854. For seven owners, there was no address available. The survey was sent out to 847 owners. No names were recorded in the following data collection: The mailing to potential participants included a paper survey, a QR code link, and a digital (web-based) link to the survey; these multiple response pathways were included in hopes of promoting a significant response rate.

3.2 Ethics

The questionnaire was designed in such a way as to limit or eliminate participant exposure to risk and discomfort. First off, participants were well-informed about the purpose of the survey. Further, the interests of the participants were protected in the survey by designing the questions so that they were not perceived as intrusive or touched on sensitive personal data. Participation in the survey was anonymous, meaning individual responses were not linked to the respondent. Participation was voluntary, with the right to end participation at any time. The contact details provided by the Swedish land agency (Lantmäteriet) were handled professionally and confidentially during the investigation. After the end of the investigation, the list of forest owners in Excel was removed and safely archived.

3.3 Questionnaire design

The survey was created with the digital tool Evasys and designed with five distinct sections. Part one contained introductory information and welcome text. Part two contained demographic questions and questions about forest ownership; these questions were inspired by interview questions from the earlier and related study by Bjärstig and Sténs (2018). Part three contained questions about social values and outdoor life. Note that the explicit use of the term "social values" was not used in the survey because it is not a commonly known/used concept. Instead, social values were described in the survey as values important for the quality of life. Questions about the development of outdoor recreation and nature tourism were designed to explore the interest in outdoor recreation for the public good and commercial outdoor recreation and nature tourism opportunities. Part four contained questions about the private forest owner's perspective on public access rights. The questions were designed using previous research (Campion & Stephenson, 2013; Bergstén et al., 2018).

Part five contains a place attachment scale, the Abbreviated Place Attachment Scale (APAS) (Boley et al., 2021). The scale is based on a two-dimensional model of place identity and place dependence as the base for place attachment. Boley et al., 2021 developed the scale to create an efficient method for measuring place attachment in different contexts and cultures. In addition, the reliability and validity of the APAS have been previously tested with good results with various cultural groups (Boley et al., 2021). The APAS includes key elements from Scanell and Gifford (2010) tripartite model for place attachment, for example, the cognitive process involved when an individual creates a bond to a place by identifying herself with the place based on values. Another example emphasizing the suitability of the APAS as a measure for place attachment is the measure for the place dimension corresponding to a place's functional role in the form of recreation or resources (Boley et al., 2021). Two different scales were created and used as part of this survey that have yet to be tested. A scale for the social values of the forest (questions 3.1-3.9) and a scale for outdoor life development (questions 3.13-3.18). Cronbach's Alpha was used to test the inter-reliability of these scales.

Statistical analysis was completed using both Excel and SPSS 27 to provide a quantitative overview and exploration of possible relationships in the data. The statistical review includes validity testing (Cronbach's alpha), basic descriptive analysis, and correlational analysis (Pearson correlation coefficient). Cronbach's Alpha test was performed on the scale for social values, the scale for outdoor development, and the scale for attachment to place. To measure the statistical strength of key relationships, Pearson correlation coefficient testing was performed between the calculated scale for place attachment (questions 5.1-5.7) and the scale for outdoor life development (questions 3.13-3.18). A correlation test was also conducted between the scale for place attachment and the scale for the social values of the forest (questions 3.1-3.9).

Open-ended survey responses were reviewed and initially coded using participants' words; these codes were then grouped into general categories. Further analysis of these general categories involved identifying clusters of meaning and theme assignment. Open-ended survey responses were analyzed using Hyncer (1985) guidelines for phenomenological data analysis. These guidelines structured the analysis of multiple iterations of data review to draw meaning from the data. Themes were determined related to the research questions.

4 Results

As noted in the Methods, the survey was sent to 847 private forest owners. Nine questionnaires had to be discarded when they were returned because they were not delivered or were not completed, leading to 838 questionnaires potentially reaching participants. There were 58 digital and 265 postal responses (paper survey format), resulting in 323 respondents participating in the survey. Given this adjustment, the survey response rate was calculated at 38%. Results from the paper surveys were entered manually into Evasys, and then the entire data set was exported from Evasys to Excel and SPSS 27 for review and analysis.

4.1 Demography

A majority of respondents were male (62%). Respondents were mostly middle-aged or early retirement age, with 75% aged 46-75, 15% older than 75, and just nine percent younger than 46. The vast majority of the participants owned forest parcels smaller than 49 hectares. Nine percent reported holdings sized up to 99 hectares; just one percent reported holdings greater than 1000 hectares. Seventy-four percent of participants reported living on the forest parcel, with an additional eight percent indicating that they had a vacation home; eighteen percent reported no living arrangements on the forest property. Fifty-eight percent owned their property jointly with an additional owner, while 42% reported sole ownership. The primary background/motivation for the forest holding was inheritance (50% of participants). See Figure 2 for a full breakdown of responses. Note that of those who answered "other," 22 indicated that the woodland accompanied a farm purchase. For ten, the motivation behind ownership was forest recreation. Sixty-four percent reported themselves as the primary forest worker on the property.

4.2 Scale results

4.2.1 Private forest owners' perspectives on social values

Questions 3.1–3.9 explored how important each social value was for the individual private forest owner; combing these results created a forest social values scale. A Cronbach's alpha had a value of 0.814, indicating very good inter-item reliability (Wikarsa & Angdresey, 2021). The value of *health, well-being, and a good living environment* was overwhelmingly the most important social value for participants. The second and third top forest social values were *identity and cultural heritage* and *the forest as a taskscape*. See Figure 3 for a full breakdown of all of the items. In question 3.10, the respondents were asked to suggest other forest social values that increase the quality of life. Responses included managing the forest and passing on the important legacy (seven responses), Hunting (four responses), preservation of wild forest (three responses), and several other single responses.

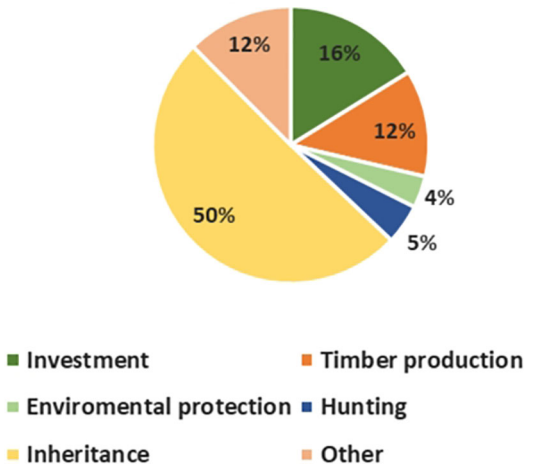

FIGURE 2
Survey question 2.7, What is the primary background to your forest land ownership? (n=321).

4.2.2 Private forest owners place attachment

Questions 5.1-5.7 were analyzed together to create a place attachment scale. A Cronbach's alpha had a value of 0.830 indicating very good inter-item reliability (Wikarsa & Angdresey, 2021). 84% of participants reported full or partial strong place attachment to their forest lands. See Figure 4 for a full place attachment scale breakdown. Interestingly, 5.3 *I identify strongly with my forest* had a combined positive percent of 72%, and the closely related forest social values question of 3.8 *identity and cultural heritage* had a combined positive percent of 78%.

4.2.3 Outdoor recreation development scale

Questions 3.13-3.18 were analyzed together to create an outdoor recreation development scale. A Cronbach's alpha had a value of 0.831, indicating very good inter-item reliability (Wikarsa & Angdresey, 2021). Participants were most positive about the non-profit items of group activity (e.g., orienteering competition) and the development and operation of unorganized outdoor recreation without profit (e.g., setting up a bench). See Figure 5 for a complete outdoor recreation development scale breakdown.

4.2.4 Public access (allemansrätt)

A large percentage of participants indicated that public access is important to allow public access to nature (Figure 6).Forty percent described public access as very important, and 29% described it as important. Only 8% indicated that this was not important.

4.3 Correlation analyses

4.3.1 Correlation between private forest owners' place attachment and perspective on forest social values

The correlation analysis showed a moderate but significant positive correlation between the scale for place attachment (M=3.64, SD = 0.81) and the scale for the social values of the forest (M =3.82, SD = 0.68), r(319)=0.30, p=<0.001.

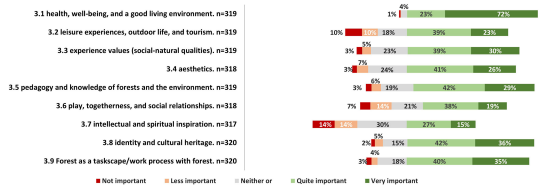

FIGURE 3
Survey questions 3.1-3.9, The following values shaped by people's experiences of the forest and its meaning for a good quality of life. Participants asked to take a position on each of the listed values.

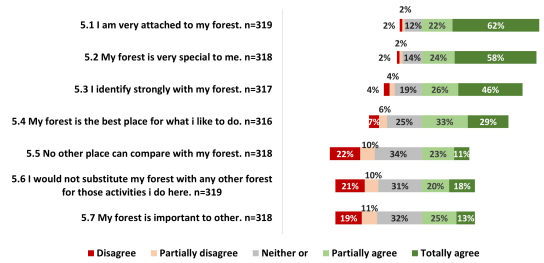

FIGURE 4
Survey questions 5.1–5.7, The following section considers your place relationship with your forest land. Take a position on the following statements.

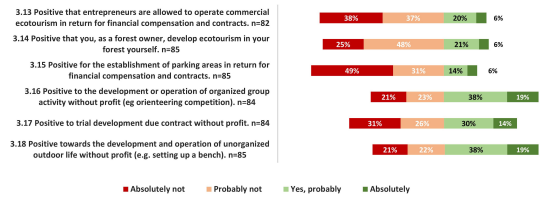

FIGURE 5
Survey questions 3.13-3.18 provide private landowner perspectives of the possible services that could be offered on their forest land.

FIGURE 6
Survey question 4.2 response, Do you think that public access is important for the public to have access to nature?

4.3.2 Correlation between forest owners' place attachment and outdoor recreation development

The correlation analysis showed a moderate but significant negative correlation between the place attachment scale (M = 3.64, SD = 0.81) and the outdoor recreation development scale (M = 2.16, SD = 0.72), r (85) = -0.22, p=0.046.

4.4 Open response analysis

One open response question explored whether problems emerged for private forest landowners based on public access (allemansrätt). Participants gave one hundred twenty-eight open-ended responses, and the analysis resulted in ten key sub-themes (Table 1). When further grouped thematically, one meta-theme emerged, allemansrätt; all subthemes can be interpreted to represent a poor understanding of allemansrätt. Beyond the overarching theme, two other broad themes emerged: litter and recreational transport.

5 Discussion

The results of this study have provided insight into questions regarding forest owner perspectives on forest social values and key relationships between forest social values and place attachment. Specific results will be reviewed in conjunction with this study's context and previous research. Putting the results together to present an overall outcome is the goal of this section.

5.1 Forest social values

A key outcome was identifying the social value of *health, well-being, and a good living environment* as the most important forest social value for survey participants (Figure 3). This primary descriptive result differs from the noted similar study by Bjärstig and Sténs (2018); in that study, outdoor recreation had the highest ranking of the various forest social values. Outdoor recreation in this current study ranked seventh out of the nine choices provided to participants; this does not imply that it was not important (62% rated it fairly to very important), but not identified as much of a priority compared to the earlier study. Relatedly, and perhaps the most interesting finding of this study, is that despite place attachment and forest social values showing a positive and significant correlation, this relationship does not seem to transcend to support for outdoor recreation development. Further, the correlational analysis showing a negative and significant relationship between place attachment and outdoor recreation development indicates a lack of support in the Hallandsås. The status of outdoor recreation development in the current study and the difference in social values with the Bjärstig and Sténs (2018) study is especially interesting for two reasons: one, considerations of efforts to support the national outdoor recreation interest area designation, and two, place-based considerations for application in outdoor recreation management; these aspects of outdoor recreation development in the Hallandsås will be developed in the following sections.

TABLE 1 Themes of public access concerns (n = 128).

Themes	# responses	Themes	# responses
Litter	68	Motorized vehicle problems	21
Poor understanding of allemansrätt	27	Disturbance of private home zone	12
Horseback riding problems	27	General wear on trails and roads	9
Mountain biking problems	23	Loose dogs without supervision	8
General damage to trees and buildings	16	Hunting and fishing offenses	5

5.2 National outdoor interest area designation

Elements included as a part of the national interest area designation, for example, improved trail systems, management of walking trails, signage, and new trail development, were not a top priority for private forest landowners in the Hallandsås region. However, with 62% of the landowners identifying outdoor recreation as a forest social value, there appears to be potential to work with these ideas. Perhaps most evident for local, regional, and national interests hoping to develop outdoor recreation opportunities in the area is the need to carefully link them with the social value of highest priority, i.e., *health, well-being, and a good living environment*. Many previous studies have repeatedly made these linkages (e.g., Buchecker & Degenhardt, 2015; Mackintosh et al., 2016; Twohig-Bennett & Jones, 2018; Eigenschenk et al., 2019; and even in the context of Covid-19 changes, e.g., Fagerholm et al., 2021). It appears that emphasizing the outcomes of well-being with outdoor recreation development might help conceptualize the type of recreation most appropriate for this region. Previous research in Spain using an ecosystem services approach found landscape values linked to the constituents of well-being, e.g., freedom, health, social relations, and security (Fagerholm et al., 2016). Further, the approach by Fagerholm et al. (2016) revealed that "the contribution of landscape to subjective well-being is largely related to relationships, i.e., the values based on interactions among people and the landscape, as tranquility/relaxation and people-people interactions such as meeting with family and friends". This previous finding suggests that part of the pathway toward outdoor recreation development may lie within a focus on relationships, landowners, and outdoor recreation participants.

Relatedly, the specific question of access is of further use for considering of national outdoor recreation interest area development. Despite noted concerns about outdoor recreation development for the public, private forest owners on Hallandsås considered public access to the forest as important, with 69% supporting this right. However, as noted in the results, this support was not without concern; the comments from the open-ended question 4.4 (see Table 1) provide a list of themes of concerns about public access; for example, littering was mentioned 68 times in 128 comments. Littering has been mentioned previously as a challenge near densely populated areas (Bergstén et al., 2018). Beyond litter, other concerns in this study show similar results to other studies, e.g., parking problems, invasion of private home zones, property damage, horseback riding, mountain bike riding, and vehicle damage (Campion & Stephenson, 2013; Manning et al., 2017). These concerns are important for outdoor recreation managers to consider as they may impact the perspective of forest social values and the development of outdoor recreation.

5.3 Place-based considerations

It appears that the combination of the character of ownership and the unique geographic location are critical factors for understanding forest social values in the Hallandsås. As noted, Hallandsås is a relatively small region with many small landowners; further, it is located in an area of high population density (by Swedish levels) and intensive agricultural production. As highlighted in the introduction, the region can be described with an island metaphor, given its unique combination of geology, topography, ecology, and cultural history. A landscape approach reminds us that all of these factors interact in producing a unique site-based identity (Scherr et al., 2013). Given these integrated characteristics, it is not surprising that the results in this study differ significantly from those from other parts of Sweden. Previous studies investigated forest landowners in central and northern Sweden, areas with smaller population densities, less agricultural area in proximity, and more contiguous and expansive forest regions (Bjärstig & Sténs, 2018; Lidestav et al., 2020).

Beyond regional differences, individual place relations seem to play a role, specifically regarding proximity to population and residency. The lack of support for the development of outdoor recreation in this study can be compared to the research by Bergstén et al. (2018). In this previous research, concern for outdoor recreation development based upon potential damage to private forest property putting landowners' sense of place at risk was considered (Bergstén et al., 2018). This outcome supports the idea that forest areas near greater population density must incorporate this reality in management and development. Relatedly, private forest residency seems to be an important demographic factor. Bergstén et al. (2018) noted differences between geographically proximate and distant forest owners concerning planning considerations. Specifically, they found that proximate resident owners were much less supportive of using, exchanging, or purchasing their land for the public interest.

In contrast, those residing outside the municipalities at some distance from their land were often more supportive. Comparing this previous result is of great interest in the current study, given that 74% of Hallandsås landowners live on their property, with an additional eight percent having a summer home on their property. This residency factor circles back to the findings of Fagerholm et al. (2016), which emphasize that a part of the pathway toward outdoor recreation development may lie within a focus on relationships, (*resident*) landowners, and outdoor recreation participants.

The resident factor may also be closely related to the idea of *taskscape*, a forest social value and place relationship based on working on the land. It is interesting to note that work in the forest was rated as a higher social value than the value of outdoor recreation (Figure 3). The working process in the forest is a part of owning, and perhaps residing, on forest land for many in the Hallandsås, thus contributing to both place dependence and place identity (Linné & Sellerberg, 2018). Moreover, as noted in the background, place dependence is a functional aspect of place attachment, i.e., the ability of a place to provide for an individual's needs or allow for goal achievement (Williams & Vaske, 2003; Boley et al., 2021). Forest owners working in their forest depend on the physical landscape but also have an emotional connection to the place because they identify themselves with their forest work. This consideration of taskscape may help illustrate how the interaction of potential factors is critical concerning forest social values.

5.4 Interacting factors

From this combination of results, previous research, and background information describing the Hallandsås from a landscape perspective, seven key elements and their interaction necessary for the consideration of outdoor recreation development in the Hallandsås have been identified:

- Hallandsås is an island
- Hallandsås is a national outdoor recreation interest area
- Public access considerations, from national goals to forest owners' perspectives
- Land ownership is largely in the form of numerous small land holdings
- Resident population, i.e., forest owners live on their land
- Forest social value priority: health well-being and a good living environment
- Forest social value: taskscapes, working on the land

A zone conducive for the consideration of outdoor recreation development exists at the intersection of these intertwined factors, see Figure 7.

5.5 Limitations

Several limitations have been identified in the research process. First, the survey was written in Swedish, which may have limited participation for potential participants without Swedish language skills. Further, question 2.3 asked about the size of the forest holding in hectares and provided several responses starting with 0-49 hectares; this survey response was a gross oversight as it became clear that a vast majority have small holdings, which is one of the unique aspects of this area. The possible response choices should have reflected this reality.

6 Conclusion

This study has demonstrated that private forest owners in the Hallandsås have strong connections to their land, and associated with this relationship is a reduced desire to develop outdoor recreation.

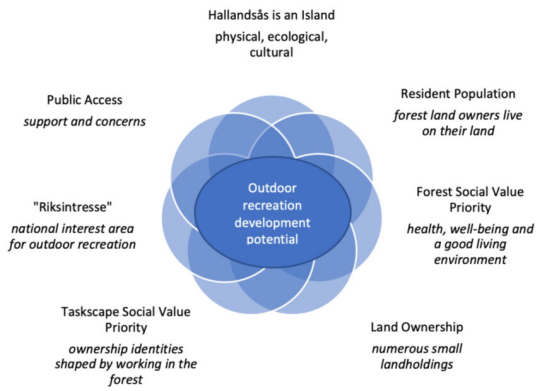

FIGURE 7
Seven key elements necessary for the consideration of outdoor recreation development in the Hallandsås.

However, this place connection is not the only factor affecting the potential for outdoor recreation development. Numerous other factors create a challenging environment for developing new public outdoor recreation opportunities. Careful consideration of the factors and interactions can provide a path for outdoor recreation development that is respectful to people and places. This careful consideration is at the core of landscape protection and management as interpreted by the European Landscape Convention. Forest owners' social values are a critical part of landscape quality objectives, along with planning that links public aspirations with landscape character.

The argument that Hallandsås may be unique in Sweden may, in turn, make it more interesting in consideration of other forested regions outside of Sweden. While factors of public access rights and national interest areas are uniquely Swedish, the south of Sweden, with expansive agricultural areas and higher population density, may make this region more similar to other sites outside of Sweden. The Hallandsås and forest social values case is both unique and valuable if outdoor recreation managers accept the key findings of this study. A unique set of factors and their interactions must be understood as a path forward for the development of outdoor recreation is to be found.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material. further inquiries can be directed to the corresponding author/s.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent was not provided because participation in the survey was accepted as consent.

Author contributions

FJ was involved in all aspects of research and manuscript development. FJ was the primary data collector. TB assisted in all aspects of research and manuscript development. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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