

# Let Nature be your teacher: Caring for agricultural landscapes through a sense of place

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## Research Article

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# Abstract

While the global agri-food system has fed a rapidly growing global population, industrialisation of agriculture is contributing to negative ecological and social outcomes. Strengthening humanity's reciprocal relationship with the natural world has potential to address these negative outcomes. This paper focuses on the relationships a group of interviewed farmers have with the landscapes they farm and the responsibilities and actions that arise in care of these landscapes. We use an abductive approach to draw from the sense of place and care of place literatures in exploring interviews with these sheep, beef and deer farmers in the Upper Clutha of Aotearoa-New Zealand. Sense of place are the meanings and attachments held by these farmers toward the landscapes they farm. Care of place is who and what farmers feel responsibilities to and their motivations to care for agricultural landscapes. The analysis highlights a diversity of place meanings and attachments, and responsibilities in care of place among the farmers. The findings provide insights into how farmers' different understandings of the relationship between nature and humans shape their place meanings when interacting with agricultural landscapes, and the actions they take in care of place. The few farmers who talked about sense of place as emergent through their interactions with the landscape referred to listening to landscapes to understand if the land was healthy. In care of place these farmers described activities and enterprises that contribute to the healthy ecological functioning of the landscape.

# Introduction

While the global agri-food system has fed a rapidly growing global population, provided livelihoods to many, and contributed to ecological functioning (Schneider et al., 2023), the industrialisation of the agri-food system is recognised as a contributor to negative ecological and social outcomes (Herrero et al., 2021; Rockström et al., 2020; Schneider et al., 2023). To address these negative outcomes there is a need for transformation to ecologically informed land uses (Abson et al., 2017). To realise this transformation of the agri-food system academics (Abson et al., 2017; Pascual et al., 2023), farmers (Gordon et al., 2022; Massy, 2020; Massy, 2013) and practitioners (Mang and Haggard, 2016) highlight the need for a shift in mindset or paradigm to one of a reciprocal and harmonious relationship with the natural world that we as farmers, consumers and citizens are a part of.

Our relationship with the natural world is revealed in how we describe and care for the places we feel a sense of connection to, through living, working and being descendants of these places (Horlings, 2016; Horlings et al., 2020). 'Places' are defined by a web of relations among people and the physical environment, and are therefore, not defined by administrative or physical boundaries but exist at different scales (e.g. town, landscape, business) (Horlings, 2016). How we experience connection to a place is multifaceted (Stedman, 2003), with the attachments, meanings, and identities we associate with a place shaping the responsibilities, obligations, and actions taken in care of place (Greider and Garkovich, 1994; Raymond et al., 2016). For example, in a study of UK farmers participating in wildlife conservation efforts, Raymond et al. (2016) found that farmers who felt a responsibility to comply with agri-

environmental schemes were motivated by financial benefits from scheme payments, while farmers who felt responsibility for restoring wildlife were motivated by moral concerns (Raymond et al., 2016).

While recognising that transformation of the global agri-food system requires changes by all actors in this system, farmers are central in the global agri-food system (Giagnocavo et al., 2022). This reflects farmers' roles as managers of land and producers of food, and their intimate relationship with landscapes through farming (Raymond et al., 2016). Farmers have also found themselves disconnected from nature through intensive industrial agriculture practices (Giagnocavo et al., 2022). Bennett et al. (2023) in discussing empirical evidence of the association between farmer sense of place and adoption of cover crops in Iowa, highlight that farmer sense of identity reflects and is impacted by the physical characteristics of the landscape they farm.

This paper aims to explore: (i) how farmers' sense of the place they live in, work at, and feel connected to is related to the responsibilities they feel and actions they take to care for that place, and (ii) how farmers' care for place when their place meanings reflect a reciprocal relationship with nature. To explore how the meanings that farmers attach to their places shape the responsibilities and obligations they experience in care of place we draw from the sense of place (Masterson et al., 2017) and care of place (Enqvist et al., 2018; West et al., 2018) literatures. Sense of place is the meanings and attachment to a setting held by an individual or group (Masterson et al., 2017). Sense of place emerges through ongoing engagement between social and physical aspects of place, and is one of the forces that shapes how individuals and groups act in care of place (Enqvist et al., 2018; West et al., 2018).

In this study, farmers' care of place is conceptualised as who and what farmers feel responsibilities to and the motivations for care of place. As per West et al. (2018), we focus on the normative influences (values, meanings, emotions, senses of attachment, connection, and responsibility) on farmers' actions in care of place. Actions in care of place are influenced by other factors, including knowledge that informs the types of actions and agency that influences the capacity to act in care of place (West et al., 2018). We focus on care as this shapes the knowledge considered relevant and the actions perceived as legitimate in care of place (West et al., 2018).

We extend current research on sense and care of place by farmers in three ways. Firstly, previous research has tended to focus on the social aspects of care of place, i.e. the interactions among people in a place (Stedman, 2003). There has been less attention to the role of the physical characteristics of place in forming sense of place (Masterson et al., 2017), and in turn, how sense of place shapes care of place. Recent empirical research has highlighted the positive relationship between care of place and people's sense of place (Sorice et al., 2023; Walker and Moscardo, 2016), specifically the presence of nature-related place meanings (Gottwald, 2022; Toomey et al., 2020). That is, sense and care of place can be understood as emergent properties of social-biophysical interactions (Masterson et al., 2017). This paper, therefore, extends previous work by considering the interrelationships between: (i) people and place, and (ii) sense of place and care of place.

Secondly, we contribute to the emerging application of sense of place in working landscapes, by exploring sense of place in an agricultural landscape. While sense of place has been used to explore pro-environmental behaviour in amenity landscapes, the concept needs to be adapted to successfully apply it to working landscapes (Bennett et al., 2023; Eaton et al., 2019). This recognises that farmers experience a physical and economic dependence with a working landscape, which leads to different place meanings compared with visitors to the landscape (Hull et al., 2001; Masterson et al., 2017).

Thirdly, we seek to contribute to understanding the potential for place meanings that reflect reciprocal relationships with nature, so called ecologically informed meanings (Masterson et al., 2017), to shape transformational changes in land use and management in care of place (Enqvist et al., 2016). This reflects the greater potential for transformational change that arise from shifts in mindset of what nature is, why it matters and how humans interact with nature, compared with changes only in attitudes or feelings of attachment towards nature (Ives et al., 2018). An example is observed shifts in tourists' perceptions of place and development of care of place from introducing tourists on Stanley Island, off the North-eastern coast of Australia, to indigenous understandings of the area by the Traditional Indigenous Owners (Walker and Moscardo, 2016). Previous research is, however, divided on the role of sense of place in transformation of land use. Marshall et al. (2012) highlight that strong place attachment is a barrier to transformation of land use in the face of climate change due to farmer identity being strongly tied to existing land use. In contrast, Lyon (2014) found sense of place is a precondition for farmer environmental stewardship by motivating sustainability improvements to their farm. We seek to understand the role of different place meanings, particularly ecologically informed meanings, in transformation of land use.

The next section introduces the analytical framework based on the literatures on sense of place and care of place and their application in working landscapes. This is followed by a description of the study location, the Upper Clutha area of Aotearoa-New Zealand, and methods of data collection and analysis. The findings are then presented, which highlight four contrasting ways the different farmers interviewed described their sense of place and associated care of place. The paper then discusses practical implications for shaping new place meanings that farmers attach to the landscapes in which they farm and that potentially support transformational changes in care of place. The paper concludes with theoretical implications regarding how sense of place shapes care of place.

## Methodology

### Analytical framework

Place is understood as a physical setting and the human experiences and interpretations of that setting (Bennett et al., 2023). Place is an emergent property of how individuals and groups experience and perceive the landscape, and actions they take in shaping the physical aspects of their place (Sorice et al., 2023; Stedman, 2016; Stedman and Ingalls, 2014) (Fig. 1). For this study the physical place was the

farmers' farms that they managed and the Upper Clutha landscape, in which they lived and worked (see *Study site*).

Farmers' interpretations of their farm and landscape reflects the meanings and attachments they have to their farm and Upper Clutha formed through social experiences and engagement with these places (Masterson et al., 2017). Landholders see the Murray-Darling Basin as part of their lifestyle to be used and enjoyed, and therefore saw their land use activities as sustainable based on farm productivity and their daily interactions with the environment (Lukasiewicz et al., 2013).

Place attachment reflects farmers' dependence on and how they define themselves (identity) in relation to their farms and the landscape (Fig. 1) (Bennett et al., 2023; Masterson et al., 2017). Place dependence describes how well a place provides a person with the ability to achieve desired outcomes, e.g. the farm as a place for family to live, derive a livelihood and economic benefit, and connect to nature. Place identity is the way that farmers see themselves and want others to see them in relation to the landscape, e.g. as a farmer, a farming family, business owner, investor, and/or protector of the land (Lukasiewicz et al., 2013).

Place meanings are the descriptive statements farmers use to talk about the farm and landscape (Masterson et al., 2017; Stedman, 2003) (Fig. 1). Lukasiewicz et al. (2013) found that farmers in the Murray-Darling Basin described the landscape as their surroundings and resources, their workspace, playground, and backyard. The different place meanings people use provide insights into what is considered appropriate features of the landscape. People living in "natural" areas tend to view evidence of human culture as appropriate and compatible features of the landscape, while seasonal tourists see human presence as degrading natural qualities (Hull et al., 2001).

Different place meanings have been found to be a strong predictor of actions in care of place (Bennett et al., 2023; Gottwald, 2022). Scholars have observed that farmers who viewed themselves as a part of the environment were more likely to adopt Aldo Leopold's land ethic, which emphasises mutualism, respect and responsibility to the land (Leopold, 1949) compared with farmers who viewed the environment as a resource to be managed for human benefit (Hull et al., 2001; Vaske et al., 2018).

We describe care of place as the guiding ethics and motivations, and the actions that farmers take in care of place (Bennett et al., 2023; Enqvist et al., 2018) (Fig. 1). Guiding ethics describe farmers' obligations in care of place. These ethics articulate what actions farmers feel are 'right' and can be founded in religious beliefs, social contracts, or informal norms (Enqvist et al., 2018). Examples of guiding ethics include the Māori (indigenous peoples of Aotearoa-New Zealand) ethic of kaitiakitanga whereby if your ancestors are connected to a place you are obligated to protect and sustain that place due to past and future relationships (Kawharu, 2000; Walker et al., 2019), and Aldo Leopold's land ethic which emphasises respect and responsibility to the land (Leopold, 1949). These guiding ethics include who and/or what farmers feel a sense of responsibility to care for, including self, family, community, consumers, ancestors, descendants, and god(s).

The actions farmers take in care of place include on-farm management and off-farm activities, e.g. political lobbying and participation in community groups (Enqvist et al., 2018; West et al., 2018). Actions in care of place can shape new place meanings, so called place-making, through intimate engagement with a place. Toomey et al. (2020) demonstrate how participating in citizen science in the Billion Oyster Project in New York City waterways led participants' to view New York City as a "water city".

Study site: Upper Clutha, Aotearoa-New Zealand

The Upper Clutha is in the South Island of Aotearoa-New Zealand (Fig. 2). The Upper Clutha's diverse landscape consists of rugged high-altitude mountain ranges, lakes and rivers, that contribute to a popular destination for outdoor recreation (Wanaka Water Project, 2020). The Clutha River, also known as Mata Au, is the second longest river in Aotearoa-New Zealand (McKinnon, 2008) The Upper Clutha catchment (4,600 km<sup>2</sup>) includes Lake Wānaka and Lake Hāwea and all bodies of water that flow to the Clutha River, which contributes significantly to the hydrology and ecology of the region. The catchment is well known for high-country agricultural landscapes due to being in high altitudes (more than 600 m above sea level).

The climate of the catchment is predominantly temperate, summers are warm and dry, while winters are cooler with regular snowfall at higher elevations. Precipitation is distributed throughout the year, with more rainfall in the winter months and strong winds reflective of the exposed alpine area. The natural beauty and diverse landscape attracts tourists for hiking, skiing, mountain biking, fishing, and boating (Queenstown Lakes District Council, 2022). The most populous town is Wānaka with a population of 17,290 (June 2023) (O'Regan, 2023; WAI Wānaka, 2021).

Prior to European settlement, the area was inhabited by Māori, predominantly Ngāi Tahu. Ngāi Tahu had deep connections to the area as a place for hunting, fishing, and food gathering for sustenance (Ward, 1989). Wānaka was also a gathering place for Ngāi Tahu people to learn from each other and trade goods; usually during warmer seasons. According to Ngāi Tahu academic Dr Michael Stevens (Otago Regional Council, 2019), the arrival of European settlers at first, saw the intermarriage between Māori and early whalers, sealers and traders, however, as the European population increased there was the disposition of Ngāi Tahu in the Upper Clutha. Due to this increase of early settlers, the 1850s saw changes to the landscape when agriculture and pastoral farming became the primary land use (Queenstown Lakes District Council, 2022).

Pastoral farm leases are particularly important in the area and involve an agreement between landowners (the Crown) and lessees (farmers) for the use of land for pasture-based livestock farming (Brower et al., 2018; Morris, 2009). Many of the early European settlers utilised leases as a means for generating income from these rural areas without the upfront costs of land ownership. These leases can be short-term, spanning only a few years to long-term leases of several decades (Evans and Quigley, 2006). More recently under the Crown Pastoral Land Act (1998), a process known as the land tenure review was established. The tenure review provided the opportunity for farmers to gain freehold title to

productive land within the leasehold, and unproductive land was turned into public conservation land (Brower et al., 2018).

Decreases in soil health and water quality in the Upper Clutha have been influenced by several factors, including changes in land management (Otago Regional Council, 2017). Intensification of land management has in places contributed to increased nutrient runoff, sedimentation, and contamination of soil and water by pesticides and fertilisers. However, in more recent times, there has been increased awareness of more sustainable farming practices within the catchment (Otago Regional Council, 2017; WAI Wānaka, 2021). While farming continues to play a vital role for the region's economy, there are increasing efforts to balance agricultural productivity and environmental conservation for long-term benefits.

### Data collection and analysis

Semi-structured interviews were undertaken to ensure a rich accumulation of data to draw inferences from. The interviews were conducted as part of a larger programme, Revitalise Te Taiao, which took a place-based approach to exploring how agribusinesses and communities can make enduring changes in land use, management, value chains, and market focus to regenerate communities and the environment (Our Land and Water National Science Challenge, 2024). As such the interviews covered topics of sense of place, environmental health, and what success means to farmers at the farm, community and catchment scales.

A total of eleven interviews were conducted with six farm owners and two farm managers who were interviewed in December 2022 and May 2023. Three of the farmers that were available in February to March 2024 were interviewed in a follow-up interview to ask about knowledge gained, changes in understanding about the catchment, and potential changes in land management and land use because of Revitalise Te Taiao. This provided additional insights into sense and care of place.

Two farmer engagement leads from WAI Wānaka selected the interviewees from farms participating in catchment groups as part of Revitalise Te Taiao. The interviewees represented the range of farm size and length of time in the Upper Clutha area (two years to multi-generational). WAI Wānaka is a community organisation that supports rural and urban communities to understand their environment, and aims to connect community groups, landowners, and businesses to support community wellbeing.

Potential interviewees were emailed and received a follow-up phone call from the second author, and those farmers that agreed to participate were interviewed. This selection of interviewees was potentially biased toward more environmentally oriented farmers due to their participation in catchment groups and Revitalise Te Taiao. The interview schedule, information sheet, and consent form were reviewed by the AgResearch Human Ethics Committee who approved the research (application #05/22). The Consent form used as part of Human Ethics also referred to Revitalise Te Taiao, which introduced holistic concepts around the environment.

The four face-to-face (three on-farm and one in a cafe) and seven online (voice or video call) semi-structured interviews were conducted by the first and second authors. Each interview, with an individual farm owner or manager, lasted one to two hours, was audio-recorded, and transcribed by a professional transcriber who signed a confidentiality agreement. Interviewees were asked to describe:

1. Their farm, with interviewers prompting for descriptions about waterways, soils, animals, and plants.
2. What success means to them for their farm, the environment, and the Upper Clutha.
3. How they would know that the environment on the farm and region is healthy, including what they would see, hear, and feel.
4. What their area means to them and how they feel connected to the region.

An abductive methodology (Dubois and Gadde, 2014) was used to investigate the interviews. This started with the lead author observing that, in the interview transcripts, farmers' descriptions of their farm and Upper Clutha, success and what a healthy environment is like suggested different farmers ascribed different meanings to their farms and the region and take different actions to improve their farm and the environment. The lead author then identified that research applying sense of place in working landscapes has begun to provide insights into farmer place meanings and actions to care for the environment. The literature on sense of place and care of place were therefore identified as a potentially fruitful framing for explaining the different meanings and actions described by farmers in the interviews.

A thematic analysis (Merriam and Tisdell, 2015) of hard copies of the transcribed interviews, guided by the analytical framework, was undertaken by the first author. Firstly, farmers' responses were structured to describe elements of sense and care of place using the analytical framework ordered in a mind map. Secondly, patterns in these responses across farmers were structured into broad associations between different place meanings and care of place. The second author reviewed the initial structuring to check interpretations based on the author's participation in the interviews and development of the analytical framework.

## Findings

Farmers' responses to the interview questions revealed that different farmers described their sense and care of place in four different ways. Below we present these four different understandings of sense and care of place in four separate subsections. While the themes are presented as distinct, the farmers often described elements of another theme in their responses.

### Intergenerational farming

These farmers described a connection to the land through generations growing up, living, and working on the land. This created a sense that they have inherited the farm as a place to live and work because of the hard work of their parents, grandparents, and great grandparents. For the farmers interviewed, two to three generations still lived and worked on the farm. This connection to the land through multiple



generations created a sense of economic dependence on the farm. This was to retain a financially viable farming business for the family to remain on the farm. This connection to the land is reflected in the quote:

*"...its been quite a journey for us because [farm] is like a young property...my mum and dad and [partner] and I have been involved with the development of the whole property and so there's a lot of meaning in a lot of it."*

This intergenerational connection to the land and investment in developing the land for farming was associated with these farmers identifying as owners and managers of the land. As such, farmers described the land in terms of the farm boundaries and its history beginning with family ownership and retaining this ownership into the future. The economic dependence on the land to enable the family to remain on the land was associated with farmers describing the landscape in terms of what is and is not good (or can be made better) for farming and for other economic "uses", such as recreation or carbon forestry, *"...so I've always looked at [farm] as recreation conservation farming...so I've never looked at [farm] as just as a farming business. ...farming in this environment, it's a tough way to make a living."* The land was then described in terms of its capacity for farming, as in this quote from an intergenerational farmer:

*"we've kind of got two different types of soils...from the river and it's quite a gravelly, very free draining soil here. So yeah, it does lack a bit, like it's really free draining and it's quite...it's not all that fertile you'd have to say.... and then we have the better soil for farming, it's probably come from the mountains."*

Place meanings associated with what is good for farming appear to have also been related to the land tenure review process of pastoral lease farms. Farmers interviewed referred to the landscape in terms of what became freehold (good for farming and under family ownership) and what became conservation land.

*"So our farm is X,XXX ha and it's freehold now, we went through tenure review in 2000...that finalised in 2011...so it was pastoral lease and it was XX,XXX ha when it was pastoral lease. So, through that process we pretty much retained the farmable parts of it."*

Sense of place as a connection through multiple generations on the farm is associated with farmer's care of place. Farmers referred to the privilege of inheriting the land and farm through the hard work of their ancestors.

*"I'm a third generation to run [farm] and so its a bit of a privilege and I probably always wanted to be a farmer"*

*"...so very lucky to be third generation of this nice piece of land."*

Farmers interviewed therefore felt a responsibility to ancestors, descendants and those working on the farm, to protect and carry on the farming business and land developed by their ancestors.

*"Well [success means] being able to retain ownership of it and control, controlling and being able to manage it sustainably and that's been a real challenge. ...just farming it with sheep and cattle, you know wasn't going to...so integrating conservation and recreation and farming all into one business."*

Actions in care of place tended to be about ensuring the land was managed as a financially viable farm to meet the needs of the family.

*" Well it stems back to when the Crown bought [farm] and we all started to realise in the high country that if they paid \$1400 a stock unit for [farm] and the market rate was \$700, then conservation values are worth a lot more than farming values and so therefore if you've got conservation values, you should look after them and protect them and manage them accordingly because they actually do have value."*

Many of the farmers interviewed talked about what needed to be done, particularly by their parents and grandparents, to make the land suitable for livestock production, through irrigation, fencing, fertiliser, sowing and renewing pastures, breeding livestock, and controlling animal pests and weeds. This was often referred to in terms of the challenges of "developing" the land for farming, *"It's not easy country put it that way...like working out what fertiliser to put on..."*, *"...battle of finding the right type of sheep"* and *"... we were good bracken burners and we burnt every bit of indigenous vegetation"*.

Many of the farmers interviewed then talked about fencing off, protecting, and regenerating or actively planting areas of the farm that could not be made productive for farming. For example, through fencing off gullies and waterways.

*"...it will end up being this enormous gully that's just regenerated and will like it's been there forever ..so it's nice ...you know those areas of the farm that...that are not super productive, to be able to do that anyway."*

To ensure the farm remains in the family and financially viable, farmers talked about farming practices meeting regulatory requirements and community expectations. To achieve this, farmers referred to implementing best farming practice guidelines, having consents in place required by regulation, and monitoring and improving different aspects of the environmental performance of the farm. These monitored aspects included carbon sequestration, water quality, soil health, and biodiversity, to demonstrate to the public and regulators that the farm practices meet regulations.

*"...so we're very visible ... and we're conscious of that in terms of our farming practices, ensuring...simple things like ensuring that our winter grazing consent is in place...we're really confident that we're doing best practice and we've got our consents in place."*

Quality land and products for consumers and communities

These farmers expressed a sense of pride in producing quality agricultural products that are desired by consumers as well as caring for the environment and livestock. This pride in what they produce was tied to these farmers' identifying with a particular type of farming and livestock, the landscapes considered

suited to that type of farming, and being able to manage the land, plants, and animals to produce quality meat and wool for consumers. An example is a quote from one farmer about the connection a family member felt towards the landscape.

*"So [partner] just enjoys that much more extensive kind of farming"*

*"...my grandfather wanted to get back to the high country so he heard of [farm] being for sale..."*

Farmers' descriptions of the landscape, especially soils, climate and absence of plant and animal pests, tended to be in terms of its suitability for producing quality agricultural products. Quality products were described in terms of mitigating or improving the environmental impacts of production as well as the quality of the product itself. This included referring to what was needed to improve the suitability of the farm for producing quality agricultural products, e.g. irrigation, pest control, fertiliser, and fencing off areas to regenerate in trees.

...when we're thinking about our carbon and where we were planting those trees, we were like okay where on the farm is a critical source area, is unproductive land, is going to improve our biodiversity and our water quality, as well as...you know, like it has to be a really cohesive approach to what we do and so...by fencing off that particular gully, the sheep can no longer get in there so therefore the little biddy bids are not getting in their wool, which produces a better product for...you know so it's all of these things...

Reflecting farmers' description of the farm and landscape as connected to consumers via value chains delivering quality products, farmers also described the farm as being connected to the local community. This was through community deriving benefits from their farm, in terms of aesthetics and access to waterways for recreation. These farmers described the social dimension, family and community as a part of the place, as well as physical dimensions of the landscape.

*"[place] is a pretty awesome place, it's got everything you need and not too many things that you don't. The people make it as well, the people and the environment are definitely a part of that."*

Sense of place as a connection to the land through being able to farm to produce a quality product desired by consumers is associated with farmers' care of place. These farmers talked about managing the farm to care for community, consumers, family and the farm business. Farmers' actions in care of place were motivated by their desire and sense of responsibility to provide a quality product that reflects their values as well as meets customer defined criteria and that consumers are willing to pay for. This was expressed by one farmer when asked what success for the farm meant to them:

*"I think success to us...firstly is financial, you know, we have to be a viable business. But to do that, we need to produce a great product otherwise no one is going to buy it from us...producing the best meat and fibre that we can that comes off the farm in a sustainable way, because that is a really important factor to people who buy from us."*

Farmers seeing their farm and the landscape as including the local community was associated with these farmers also describing a sense of responsibility to care for the land and water for the community. This farmer refers to the importance of water quality in a farm creek; one the community access for swimming.

...so as [creek] leaves the property just before the village, it's the community swimming hole. So it's been there forever and they've got the...the community association have got permission every now and then to dig out the bottom of it, it's an incredible community asset and so we're really conscious of that in terms of you know, children swimming in the creek and so we test....that's part of our testing regime with WAI is that we test the creek every three months.

Actions these farmers took in care of place tended to focus on activities that meet regulatory, market and customer specifications, such as animal welfare, environmental and product quality standards. This included participating as producers delivering differentiated, high quality agricultural products via market-focused organisations and being part of industry audit schemes.

Meeting environmental requirements of customers and regulators was achieved through activities to protect natural areas, e.g. fencing off and keeping stock out of waterways, and was tied to achieving multiple environmental goals and a quality product. Farmers' sense of place, including a strong social dimension and sense of connection to consumers and community, was associated with these farmers referring to the importance of activities to connect consumers with how the product is produced, for example through customers visiting the farm.

### Landscapes to support farming

These farmers talked about the landscape and farm in terms of the interconnection of waterways, land, soil, plants, animals, and climate, and how each contributes to the health of the other to ensure the farm is productive. This was associated with talking about working within the landscape and farm infrastructure so that the farm functions well to keep pastures, crops and animals in good condition to produce agricultural products. This sentiment of working within the landscape was expressed by a farmer as:

*"...you don't necessarily go in and farm land and sort of have that idea in your head that every acre needs to be put into productive farming because it's just, you know, otherwise you have nothing left."*

Farmers' place meanings referred to the heterogeneity of the landscape and interconnectedness of landscape elements. This included describing areas of native forest of the farm as part of being able to care for livestock and produce quality products, for example as a source of shelter for farm animals. Heterogeneity within the farmed landscape was described in terms of how soils, plants and animals are managed and cared for in different ways across the landscape, reflecting on what the land can withstand when farmed. For example, matching the management of soils to soil type and identifying these different areas based on how pasture looks and grows through the year.

*"Yeah well, naturally farming it you know where the productive areas are and where the, you know, the soils are heavier because it produces more like, grass, or it stays greener. The heavier soils stay – for longer through the dry periods and being a dry land farmer you sort of naturally work out where that – where those paddocks are. "*

Sense of place as heterogeneity and interconnected landscape elements is associated with farmer's care of place. These farmers described the human and natural elements of the landscape as separate, but connected in that nature needs to be cared for to ensure it can be farmed without degrading the environment. This was expressed as farmers' sense of responsibility and duty to care for and protect human and non-human life on the farm. For example, referring to how the farm is suitable from the perspective of livestock:

*"I think topography for the [livestock] on the hill calving is really well suited in its extensive nature, both for browsing and also for shelter. So, from an animal's point of view, it's a really nice property..."*

These farmers' actions in care of place included matching farm management practices to the capacity of the landscape to be farmed, incorporating natural areas into farm management and protecting them. Matching farm management to areas suitable for particular land uses and management included understanding the soils, current and future climate, typology and impacts on waterways. This included diversifying enterprises (cropping, trees) on the farm:

*"The general farming will go back to a lot of that mixed cropping sheep farming because it will help the environment a lot more, and you can still provide a lot of food."*

Additionally, it could involve stopping land uses that did not fit with the climate and soils that were having a negative impact on waterways. This farmer also talked about using native forests in their farm management to provide benefits for production, as well as retaining these forests as part of the landscape:

*"...great for me to keep all that [manuka stands] tidy and nice because you know, when I shear in the middle of winter, I shear in July, and put the sheep out...they can go and stand underneath that manuka and it's all just natural shelter and it looks good."*

Finally, farmers also took care of place by protecting natural areas on the farm through fencing and keeping stock out of waterways and controlling plant and animal pests. These actions were described in terms of their benefits for the environment as well as farm production:

*"...it would be great success if they got on top of the rabbit problem...save a lot of erosion and a lot of land that gets decimated by rabbits."*

Farming to support landscapes

These farmers talked about the landscape and farm as interdependent in space and time. They described the interdependence of all aspects of the landscape to ensure healthy ecological functioning. On a broad spatial scale, the farm was described as a part of the social and physical landscape connected through opportunities for the community to connect with the farm through recreation and environmental protection activities, such as tree planting, and connected to the landscape through waterways. On a temporal scale, these farmers talked about the rhythms of the farm, landscape, and nature through the seasons. They also talked about what the farm and landscape were and could become over periods of at least 100 years, and how the future of the landscape is a function of its past.

*"...transforming the property into what we think it could be in 50 years' time or even 100 years' time...learning from the past from 1900 when the [name] family first bought it and farmed it livestock-based for 100 years, now what we do for the next 100 years."*

The role of activities on farm was then to support the natural functioning of landscapes so that people and environment are healthy. Farming and livestock were described as a part of the healthy functioning of the landscape and nature. For example, the role of animals and plants in holistic management, as described by Dick Richardson and Allan Savory, to support and regenerate soil health, is evidenced by one farmer's observations of changes in soil structure and water holding capacity because of practicing holistic management.

*"the paddocks that we're talking about you can get 3 inches of rain and that rain is gone the next morning, it doesn't sit on top of the paddock. Whereas when I watched dad, you know, put on super phosphate for 30 years, the topsoil was like a brick."*

As such these farmers described themselves as caring for the land:

*"...not being too hard on it and just letting it do its thing because it's part of the environment."*

These farmers also talked about the farm in terms of what activities and enterprises are suited to the land, soils, waterways and climate. As such, these farmers considered enterprises that fit with these landscape characteristics. Farmers described a connection to the landscape as living and functioning as a whole system.

*"it's a feeling that you can feel that things are alive, not just being..." and "...it's just using nature to create production. I just think it's a beautiful system how - but it is mainly to create a strong and healthy water cycle."*

This was also observed when two of the interviewed farmers referred to the insight that waterways are living after they had eDNA analyses of farm waterways.

Sense of place as landscape and farm being interdependent is associated with farmer's care of place. These farmers described the farm and landscape as being restored to operate as an entire living system

that supports food production for the health of the environment, family, consumers and community. An example is this response from a farmer when asked what success would look like for the environment:

*"I would say something that allows it to be its own complex system....allowed to do its thing... and not be harmed by letting it do its thing..."*

As such these farmers were motivated by an ethic of care of the landscape so that it can flourish and function naturally.

*"now you kind of care...over time you kind of care about [the animal's] environment and then once you learn more, you realise that its environment isn't just space that its inhabiting but also the actual, you know, quality of the soil that is growing its food and you know, and then that food that's growing you know, what that entails and healthy that is and that really interests me now"*

They were also motivated by a sense of when the landscape is flourishing it is morally right:

*"...what I'm sort of explaining is more a feeling...Something that feels right morally and you know, at the heart of it."*

As such, these farmers talked about a sense of responsibility to a flourishing landscape and community. These farmers' actions in care of place were focused on regenerative and holistic management practices to enable natural functions in soils, land, water and farm and non-farm animals. For example, increasing the microbial life within soils and regeneration of wetlands. Reflecting that these farmers viewed the farm as part of the wider social and physical landscape, they also sought to connect community with the farm through the community being able to visit the farm to participate in environmental activities, such as planting trees, undertake recreation and purchase farm produce that meets local community needs.

*"...what food can we grow here in the next 50 years, or what do we need to grow for the community?"*

## **Discussion**

The findings of this study show that farmer's sense of place shapes their care of place (ethics, responsibilities and actions). Our findings therefore support previous research that has found actors' place meanings provide insights into what different actors consider to be acceptable features of the landscape (Hull et al., 2001; Lukasiwicz et al., 2013) and appropriate actions in care of place (Bennett et al., 2023; Gottwald, 2022; Lukasiwicz et al., 2013). Here we contrast sense of place and care of place among the four different types of farmers.

Firstly, farmers in "Intergenerational farming" described the landscape as a place owned and managed over multiple generations for agricultural production, dividing the land into what was farmable and non-farmable. The farmable areas were cared for through the hard work of making the land productive by providing agricultural inputs and management. This reflects previously observed high country farmer

identities as pioneering, hardworking and battling against the elements (Morris, 2009). These farmers' relationship with landscapes and farming activities has some similarities with productivist farmer identities that emphasise production-oriented concepts such as yield and profit (Bennett et al., 2023; Roesch-McNally et al., 2018) and a so-called "domination value orientation" that suggests landscapes should be managed for human benefit (Vaske et al., 2018).

The second type of farmers in "Quality land and products for consumers and communities" described landscapes as places managed to produce high quality agricultural products for discerning consumers and natural amenity for communities. These farmers also divided the landscape into what was farmable and non-farmable. Compared with farmers in "Intergenerational farming", non-farmable areas had a role in contributing to extrinsic attributes of products, such as environmental benefits from the farm, or providing amenity values to community. These farmers' relationship with landscapes and farming activities has similarities with previously described experiments in creating value from the land within the Aotearoa-New Zealand biological economy, such as merino wool clothing and mānuka honey (Pawson, 2018). These farmers also appear to balance their rights as a landowner to manage and use land for producing quality products with the rights of society to environmental benefit from responsible landscape management (Vaske et al., 2018).

The third type of farmers, "Landscapes to support farming", described landscapes as interconnected waterways, soils, plants and animals that support the health of each other. These farmers described how farm production was dependent on and improved by the landscape. These farmers sought to match farming activities to the landscape, incorporate natural areas into farm management and protect natural areas. These farmers' relationship with landscapes and farming activities has similarities with conservationist farmer identities that emphasise the long-term health of the land (Bennett et al., 2023; Roesch-McNally et al., 2018).

Finally, farmers in "Farming to support landscapes" described their farms as part of living landscapes. This is similar to farmers practicing regenerative agriculture who talk of enabling nature's capacity for self-organisation (Gordon et al., 2022). These farmers were motivated by an ethic of care for the landscape through a sense of when the landscape is flourishing it is morally right. Farming activities, enterprises and animals were chosen to suit the soils, waterways, and climate and to support the natural functioning of landscapes so that people and environment are healthy. These farmers' relationship with landscapes and farming activities has similarities with Aldo Leopold's land ethic (Bennett et al., 2023; Vaske et al., 2018).

These findings expand on earlier research on the connections between sense of place and care of place in three ways. The first is by highlighting the diversity of place meanings and attachments, and care of place present among farmers living in the same landscape. This responds to the call by Masterson et al. (2017) for more research to understand this diversity of place meanings. Our finding is similar to recent research in the United States by Rajala and Sorice (2022) who found that despite socio-ecological regional differences, landowner sense of place was similarly diverse within each region rather than



specific to regions. The second is by shedding light on how farmers' different understandings of the nature-human relationship shape their place meanings when interacting with agricultural landscapes. The third is by providing insights into aspects of place meanings associated with a reciprocal relationship with the natural world and the ethics, responsibilities, and actions in care of place associated with these meanings, for the case of "Farming to support landscapes". The last two contributions to existing research on sense of place in working landscapes (Bennett et al., 2023; Eaton et al., 2019) are elaborated on below by contrasting sense of place and care of place for farmers in "Intergenerational farming" and farmers in "Farming to support landscapes" described in the Findings.

#### Human-nature relationship shapes how farmers form a sense of place

Farmers who described the landscape as a place to be owned and managed ("Intergenerational farming" and "Quality land and products for consumers and communities") describe sense of place as socially constructed. This reflects sense of place scholarship that emphasises the social interactions that create place meanings (Hay, 1988) and how power and discourse manipulate place meanings towards a particular group's interests (Payne, 2017; Stokowski, 2002). As such, these farmers referred to new place meanings, so called place-making (Toomey et al., 2020), created through social activities. Firstly, through legislation and rezoning, such as the land tenure review process, in relation to the functional roles of landscapes, e.g. conservation and farming. Secondly, through consumers seeking products produced with animal welfare and environmental attributes. Thirdly, through activities to make the land farmable and the challenges that the high-country landscape presents to make it suitable for livestock farming. Care of place was therefore described in terms of human activities that redefined places, through rezoning, making the landscape suitable for farming, separating out those areas that could not be made suitable into conservation or recreation, and meeting public and consumer expectations of what landscapes should look like. This parallels findings by Morris (2009) and Payne (2017) regarding the impact of land tenure, specifically the New Zealand high country land tenure review, on farmers' relationship with landscapes and what is considered acceptable land uses in the high country.

This contrasted with farmers who talked about the interrelationship of human and nature as part of an interdependent whole ("Farming to support landscapes"). These farmers talked about sense of place as emergent through their experiences of and interactions with the landscape. This reflects scholarship on the role of landscape features in construction of place meanings (Stedman, 2003). These farmers recognised the role of changes in the physical landscape in the ongoing shaping of place meanings. This suggests such place meanings may overcome risks of place meanings being slow to respond to environmental changes (Lyon, 2014; Stedman, 2016). These farmers referred to 'listening and feeling landscapes' to understand if the land was healthy, suggesting that the land itself provides advice on how it should be cared for. This has parallels with indigenous practices, such as feeling and hearing country in Australian Indigenous practice (Poelina et al., 2023). In care of place these farmers talked about what activities and enterprises were suited to the landscape and climate and contribute to the healthy ecological functioning of the landscape.

## Place situated in space and time

Farmers differed in how they described the boundaries of place in space and time. Farmers who described farms as a place to be managed and owned (“Intergenerational farming” and “Quality land and products for consumers and communities”) referred to place as bounded spatially by the physical farm boundaries and temporally by the period of the farm being in family ownership or management. This has parallels with research by Campbell (2020) who observed that for some farmers the impacts of what they do inside the farm boundary on what happens outside the farm is only of vague and abstract interest. Farmers who described quality land and products for consumers and communities appeared to have a slightly wider boundary, though socially centred, with the farm situated within a value chain that connected the farm with consumers, and within a local community that appreciated amenity values from the farm. As previously noted, this appears to have parallels with farmers having a sense of responsibility to society (Vaske et al., 2018).

These perspectives contrasted with farmers who talked about their interdependence with the land (“Farming to support landscapes”) who referred to place on broader socio-ecological spatial and temporal scales. These farmers described the farm as being ecologically situated within the wider landscape connected with mountains, rivers and lakes through wetlands and waterways. They also described the farm as part of the local community, providing recreational and conservation opportunities, as well as food. These farmers also appeared to situate the farm in its own unique history over longer time scales, describing visions for the farm 50 years or more into the future and reflecting on the changes to the farm and landscape because of climate change. This situating of a farm in broader socio-ecological (Massy, 2020; Massy, 2013) and temporal scales (Gordon et al., 2022) has previously been observed of farmers engaging in regenerative agriculture. It has also been observed of farmers with a so called “holistic frame” to landscape stewardship, who described the interactions between their farms, landscape, ecology, and land over different spatial and temporal scales (Raymond et al., 2016). This appears to have contributed to a sense of responsibility and connection to customers, community, and wider landscape and hence actions to care for these wider physical and social dimensions of place.

## Practical implications

For policy makers and researchers, the findings highlight the diversity of place meanings and hence what motivates different farmers in sense of place and therefore care of place. For researchers, this highlights the potential usefulness of sense of place as a methodology for researchers to understand sources of variation in how farmers act in care of place (Masterson et al., 2017; Stedman, 2016). For policy makers, understanding this diversity of place meanings helps to identify different interventions to support land use and land management changes and practices in care of place (see also Gottwald (2022)). In considering different interventions policy makers could consider how these may challenge or leverage existing place meanings, and in particular farmer identities (Masterson et al., 2017). For example, for farmers in the “Intergenerational farming” type, policy and societal narratives that highlight opportunities

to continue the family farming legacy and shifting from “battling” against the land to “working with” the land may support these farmers in exploring new land uses.

For people working with farmers on environmental activities the findings suggest actions that could be taken for transformational change through a shift in mindset to one of a reciprocal relationship with nature by reshaping sense of place. The first is the importance of a trusted relationship with farmers to understand their sense of place. The second is to further grow farmer’s appreciation of the agricultural landscape as a living interconnected whole. For example, undertaking activities that strengthen farmers relationship with the soils on their farms through farmers monitoring and observing changes in soil health following adoption of soil conservation practices, such as cover crops, which provide socio-ecological feedback (Roesch-McNally et al., 2018).

The third is to situate their farms in a wider socio-ecological landscape and longer past-present-future timescale. This could consider historical changes in the socio-ecological landscape as part of the preparation of farm plans, which take a strategic approach to integrating environmental management activities alongside other aspects of farm management and farm system design to address environmental issues (Manderson et al., 2007). Farm plans could include descriptions of the biophysical setting which connects the farm to the wider landscape through topography, waterways, biodiversity and soils and the social connections through sources of farm inputs, product supply chains, historical setting, and where public recreate (Misanya et al., 2023). This could support farmers’ sense of being a part of and responsibilities within a community (Vaske et al., 2018) and the farm within a landscape in which the farm and environment work together (Raymond et al., 2016).

The final opportunity is to undertake activities with farmers to listen and feel the landscape (Poelina et al., 2023). This includes looking, feeling, smelling and listening carefully to every aspect of landscapes to become deeply aware of the spatial and temporal variations in the landscape (Poelina et al., 2023). It also includes developing an intimate relationship with the landscape by acknowledging landscapes as a source of knowledge, as having moods and emotions like humans (Pain and Pepper, 2021).

### Theoretical implications

In this paper we sought to contribute a grounded understanding of the potential for farmers’ place meanings to shape transformational changes in land use and land management practices in care of place (Enqvist et al., 2016). Our findings contribute to understanding the interrelationship among sense of place, the condition of landscapes and potential for transformational changes in land use and land management in care of place. Previous sense of place research suggests that during periods of environmental change, place meanings often change slower due to meanings being vital to local identity (Lyon, 2014). This may lead to a “social-ecological trap” if place meanings obscure ecological signals regarding declining environmental health, and so people do not respond fast enough (Stedman, 2016).

Our findings, however, suggest that farmers in the “Farming to support landscapes” type for whom place meanings reflect reciprocal relationships with nature, so called ecologically informed meanings

(Masterson et al., 2017), are more attuned to changes in environmental health. This is through several mechanisms by which these farmers' place meanings are shaped. Firstly, these farmers' place meaning was emergent through their ongoing engagement with the landscape. That is, place meaning is tied to changes in the environment. Secondly, these farmers emphasised feeling and listening to landscapes to understand environmental health. Thus, these farmers were potentially more attuned to the integrated health of soils, waterways, animals and plants in the environment. Finally, these farmers understood their farm as situated in the wider socio-ecological landscape. Thus, these farmers were tuned into ecological signals in the wider landscape and community.

## Limitations

In undertaking interviews for this research there is a risk that deeper emotional and philosophical connections with place were not articulated by participants as the interviewers had not established a level of trust with the participants for them to feel comfortable expressing these deeply personal connections to place (Hiller and Diluzio, 2004). As such the interviews may lack insights into the different deep, spiritual connections to their farms that farmers experience. On the other hand, the selection of interviewees was potentially biased toward more environmentally oriented farmers due to their participation in catchment groups and the Revitalise Te Taiao programme, which referenced holistic concepts around the environment.

## Conclusions

The global agri-food system is a significant contributor to continuing ecological degradation and social inequities. To address this there is an urgent need to transform the agri-food system by moving to a deep, reciprocal and harmonious relationship with the natural world that we as farmers, consumers and citizens are a part of. The aims of this paper were to explore: (i) how farmers' sense of the place is related to the responsibilities, obligations and actions to care for that place, and (ii) how farmers' care for place when place meanings reflect a reciprocal relationship with the natural world.

Four farmer types have been presented that illustrate different farmer sense of place and how these are related to care of place. These types highlight the diversity of place meanings, attachments and care of place present among farmers living in the same landscape. They also provide insights into how farmers' different understandings of the nature-human relationship shape their place meanings when interacting with agricultural landscapes.

The transformative potential of place meanings that reflect a reciprocal relationship with nature has had limited consideration in literature on farmer sense of place in working landscapes. This paper provides insights into aspects of place meanings associated with a reciprocal relationship with the natural world and the ethics, responsibilities and actions in care of place associated with these meanings. Further research can build on this paper in three ways. Firstly, by testing and expanding on the four farmer types describing different sense of place and care of place, including the extent to which actions in care of place are consistently associated with particular place meanings. This could be done through farmer

surveys to study a larger population and collect more diverse views to understand the relative prevalence of the four types, the presence of additional types, and relate these to demographic and farm characteristics. Secondly, by further exploring the transformative potential of place-making activities that grow an appreciation of the landscape as a living interconnected whole. This could be done through longitudinal studies of farmers participating in action research implementing these activities.

With the ongoing contribution of the global agri-food system to ecological degradation these findings hint at the transformative potential of farmers' sense of place that reflect a reciprocal relationship with agricultural landscapes.

## Disclosure

statement

No potential conflict of interest was reported by the author(s).

## Declarations

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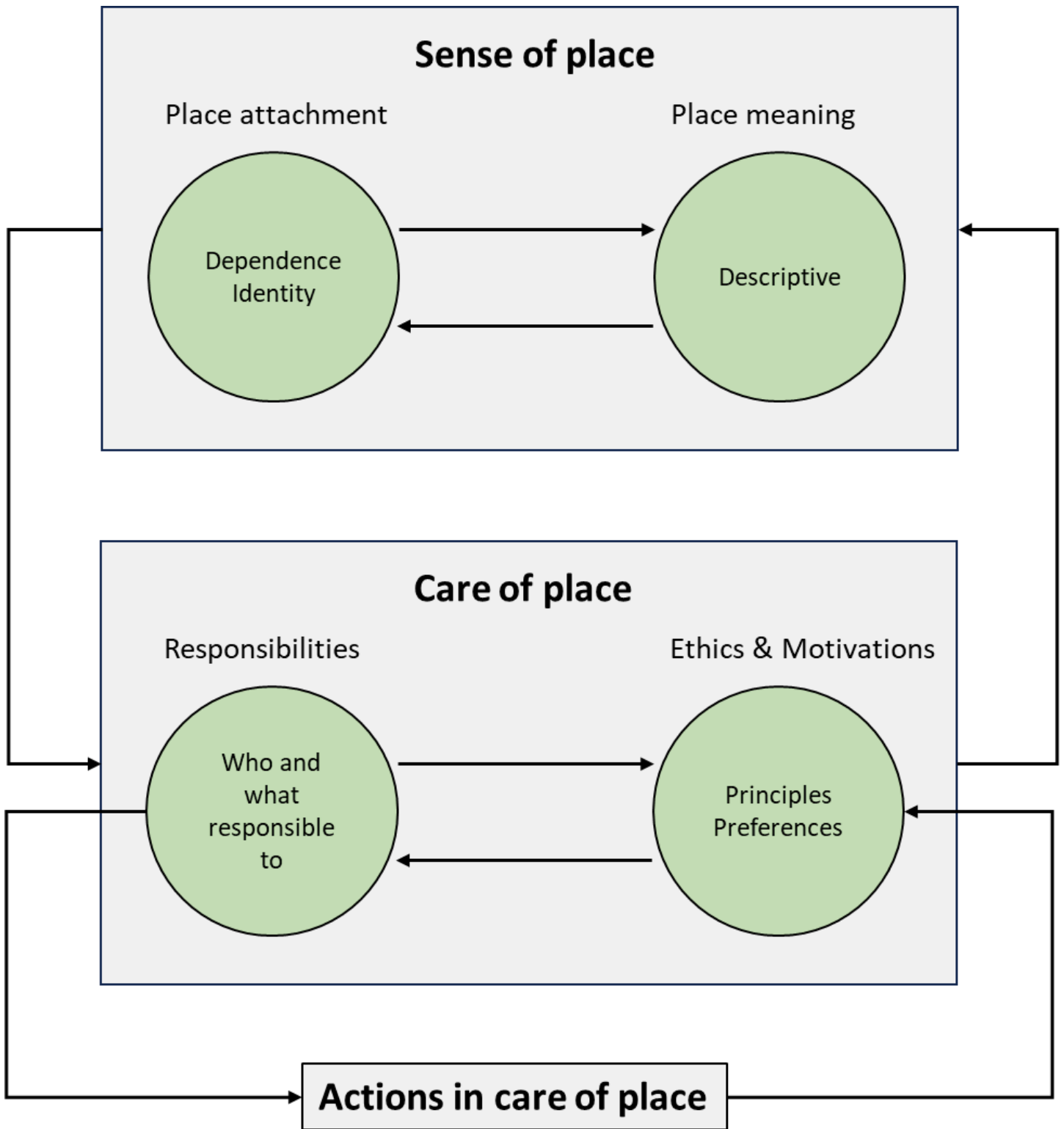
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## Figures



**Figure 1**

Analytical framework showing the elements of and relationships among sense of place and care of place. Adapted from Masterson et al. (2017).

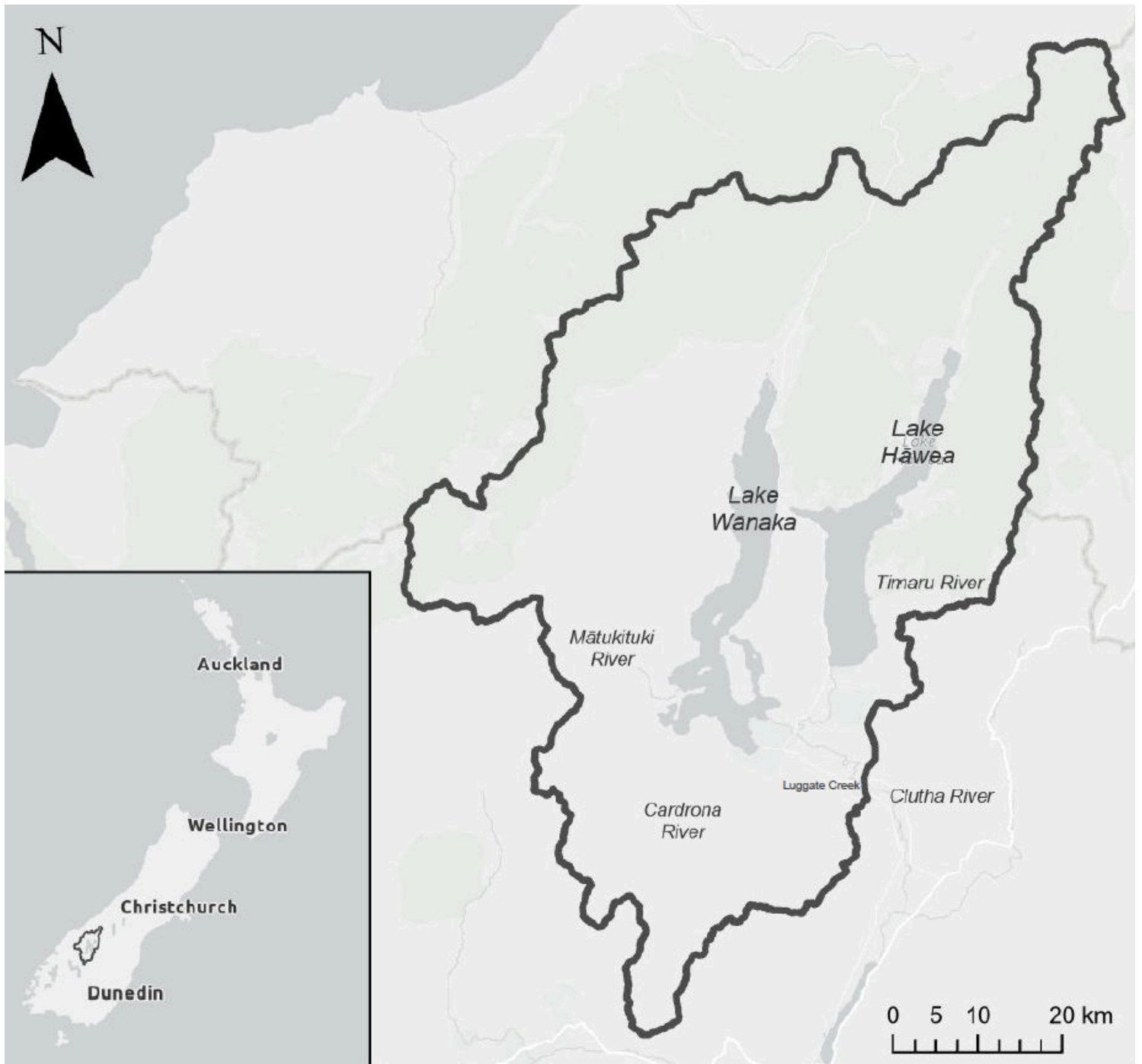


Figure 2

Map of the Upper Clutha Catchment area showing the different rivers and lakes.