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Human-animal mutualism in regenerative entrepreneurship

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ABSTRACT

In this paper, we explore the micro-interactions through which a regenerative enterprise engages with proximate natural ecosystems in its attempt to repair and protect them. Through an ethnographic study of a regenerative farming enterprise in rural Southern Patagonia - *Fundo Panguilemu* - we discover a reciprocal relationship between the enterprise and animals, central to their regenerative efforts. This relationship is formed and actively maintained by the founders through three practices – joint rewilding, ambivalent relationality, and task interdependence. We leverage nature relatedness to conceptualize the relationship between these practices as *human-animal mutualism in regenerative work*. We advance regenerative entrepreneurship research by revealing novel human-nature interactions formed and fostered by a rural enterprise in the pursuit of local regeneration and expand our understanding of micro-level phenomena in rural entrepreneurship.

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1 Introduction

Interest in ecological restoration has grown significantly in recent years across the social sciences. In entrepreneurship research, regenerative enterprises are seen to be at the forefront of these efforts (Hahn and Tampe 2021; Muñoz and Branzei 2021; Vlasov, Heikkurinen, and Bonnedahl 2021), because by working together with nature, regenerative enterprises can create value and help restore life in vulnerable ecosystems. Hahn and Tampe (2021) argue that regenerative enterprises are unique businesses that enhance and thrive through the health of social-ecological systems in a co-evolutionary process. They do so by sensing and embracing surrounding living ecosystems and aligning organizational knowledge, decision-making, and actions to these systems' structures and dynamics (Muñoz and Branzei 2021). Through it, regenerative enterprises allow ecosystems to regenerate, build resilience, and sustain life. This has been particularly embraced by rural entrepreneurship research and practice,[1] since 'farmers and other rural entrepreneurs are already using a circular logic [. . .] imbricating agentic matter with their own agency' (Tillmar et al. 2022).

Despite being part of living natural systems and striving to develop co-dependencies with them, we know very little about how regeneration is enacted by rural enterprises in and with nature (Muñoz and Branzei 2021), and the relationships formed between rural entrepreneurs and the proximate natural ecosystems in their attempts to regenerate them (Fios 2019; Restall and Conrad 2015). This has been surprisingly overlooked by entrepreneurship scholars, remaining a poorly

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understood phenomenon. This means that important approaches and practices, whereby the regeneration of local ecosystems is or can be facilitated by enterprises, are yet to be discovered.

Looking under the hood of enterprises committed to regenerating nature, in terms of how they form and maintain relationships and interactions with nature, could potentially reveal radically different practices and mechanisms (Huber et al., 2020) and eventually bring to the fore novel forms of organizing with and around natural ecosystems. Therefore, in this paper we ask: *how are human-nature relationships formed and maintained by regenerative enterprises in their attempt to restore and protect natural ecosystems?*

To examine this question, we ground our work in two intertwined bodies of literature. First, regenerative organizing, which views places, species, and enterprises as intrinsically interconnected parts of living systems (Muñoz and Branzei 2021). Second, nature relatedness, which helps to understand how humans connect at multiple levels with nature and develop synergistic relationships with other living beings (Nisbet, Zelenski, and Murphy 2009).

Through these lenses, we conducted an ethnographic study of a regenerative farming enterprise in rural Southern Patagonia, Chile, called *Fundo Panguilemu*. Panguilemu is a for-profit regenerative farming enterprise that approaches sheep farming, small agriculture, science education, and tourism using Holistic Management philosophy and practices. As a regenerative farming enterprise, Panguilemu seeks to enhance, and thrive through, the health of social-ecological systems (Hahn and Tampe 2021). Data was collected between July 2019 and February 2022.

We discovered a type of reciprocal relationship that is formed between the enterprise and animals in their effort to regenerate proximate natural ecosystems. This relationship is formed and actively maintained by the enterprise through three practices: joint rewilding, ambivalent relationality, and task interdependence. Our findings suggest that the development of mutual dependencies between humans and animals, and collaborative work between species, are necessary to regenerate and protect the natural environment. To make sense of our findings, we returned to nature relatedness to leverage the notion of mutualism (Holland and Bronstein 2008) and conceptualize this relationship as *human-animal mutualism in regenerative work*. It explains the ecological interaction between species, where each of them benefits from reciprocal work, and local ecosystems are restored and protected as a result of mutual benefit. We offer a model that explains how the three practices – joint rewilding, ambivalent relationality, and task interdependence – interact, reinforce each other, and connect humans and animals in regenerative *work*.

We make several contributions to literature. Through our findings and model, we advance regenerative entrepreneurship research by revealing novel human-nature interactions formed and fostered by a rural enterprise in the pursuit of local regeneration. We explain how the practices underlying regenerative work are ingrained in the life of a rural enterprise as a form of ecological work that is felt, experienced, and co-enacted by different species. These 'with-nature' regenerative practices expand our understanding of management for ecosystem restoration and open a conceptual space for the development of regenerative entrepreneuring. In doing so, we expand further the understanding of micro-level phenomena in entrepreneurship, showing the scope of cognitive and emotional connections humans can build with nature and the potential impacts thereof.

2 Theoretical grounding

Regenerative entrepreneurship

Regenerative enterprises are unique businesses that enhance and thrive through the health of natural ecosystems in a co-evolutionary process (Hahn and Tampe 2021). We understand natural

ecosystems as a community of living and non-living organisms, where each component interacts together as a unit through biological, physical, and chemical processes. Through a regenerative approach, businesses can restore degraded living ecosystems and build resilience in and improve the well-being of the communities relying on such ecosystems (Muñoz and Branzei 2021).

Regenerative organizing is grounded in the regenerative development movement, which puts forward more radical ideas of how human needs are to be satisfied 'sustainably' and how the quality of life can be improved. Most notably, it sees the satisfaction of human needs as a process necessarily built on a mutualistic relationship with nature (Kellert and Wilson 1995; Simaika and Samways 2010; Wilson 1984). Regenerative development is prominent in conservation research, where scholars have sought to better understand how biodiversity can be restored and preserved (Holmes, Sandbrook, and Fisher 2017; Kopnina et al. 2018; Piccolo 2017). They emphasize the relevance of eco-centric values, symbiotic relationships, ecological experiences, and emotional ties with nature. In entrepreneurship research, regenerative development can be thought of as an approach that explicitly recognizes that enterprises have a role to play in ecological restoration, which goes far beyond approaches that only see nature with admiration or as inspiration.

Regenerative enterprising sees complementarities between humans and nature. In line with deep ecology principles,[2] regenerative enterprising observes that nature can only contribute to advancing human well-being by helping it retain critical ecosystem functions. The services ecosystems provide are only possible through the development of inter-relationships and co-dependences between the enterprise and nature.

This approach can thus enable deeper levels of human-nature entanglement (Muñoz and Branzei 2021), where entrepreneurial activity is thought to be part of overarching natural ecosystems and strive to develop unique co-dependencies with them (Muñoz and Hargreaves 2021). This is at the core of Hahn & Tampe's, 2021 co-evolutionary process. In this sense, regenerative enterprising does not set limits dividing social, economic, and natural systems, but emphasizes the idea that the enterprise exists as part of an interwoven co-dependent system (Folke et al. 2005). To do so, these enterprises tend to follow nature's principles (Muñoz and Cohen 2017) and have begun to develop innovative practices of ecological restoration and protection (Branzei et al. 2018).

When seen through this relational lens, regenerative enterprising marks a departure from other approaches to human-nature relationships conceptualized previously in the literature, such as industrial symbiosis (Walls and Paquin 2015), biomimicry (Fernhaber and Stark 2019), place-making (Shrivastava and Kennelly 2013); and relational agency (Good and Thorpe 2020; Heikkurinen et al. 2021). Authors argue that regenerative enterprises can open new conceptual spaces and expand our limited understanding of environmental entrepreneurship and the micro-level practices that nurture it (Muñoz and Branzei 2021; Vlasov, Heikkurinen, and Bonnedahl 2021). If regenerative enterprising exists embedded in living systems and is somehow interwoven with their inner dynamics, an opportunity emerges to explore what regenerative enterprises do, what those relationships might entail and how are they formed and maintained by these enterprises. A focus on regenerative work calls for an alternative theoretical lens, capable of capturing and examining the micro-level interactions through which a regenerative enterprise engages with natural ecosystems in its attempt to repair and protect them, as well as how humans and nature might derive benefits from such relationships (Karami and Gorzynski 2021).

Regenerative enterprising and nature relatedness

To facilitate observation, analysis, and sensemaking of human-nature relationships in regenerative enterprising, we turn our attention to Nisbet et al'.s (Nisbet and Zelenski 2013; Nisbet, Zelenski, and Murphy 2009, 2011) work on nature relatedness. Drawing on the biophilia hypothesis (Kellert and

Wilson 1995; Wilson 1984), Nisbet et al. argue that humans have an innate need to connect with other living beings (Baxter and Pelletier 2019), with a deep level of involvement (Kals, Schumacher, and Montada 1999). This attachment reflects the degree to which people see themselves as part of natural ecosystems. The more people relate to nature, the more will they be aware of their behaviours and attitudes, encouraging greater environmental concern and awareness for and involvement with all living beings (Schultz 2000). It also draws on Ray's (1982) propositions that the love of people is not only closely associated with the love of animals but also with a love of living things in general.

Nature relatedness embraces a wider range of connections including the feeling of being part of an ecosystem, the sense of well-being, happiness, attachment, or love (Restall and Conrad 2015; Zelenski and Nisbet 2014). It is different from other concepts, such as the New Ecological Paradigm (Dunlap et al. 2000), Ecological Consciousness (Ellis and Thompson 1997), Environmental Identity (Clayton 2003), and Mayer and Frantz's (2004) Connection to Nature. These concepts do not take into consideration the emotional, personal, physical, and experiential aspects of human-nature relationships, which are central to an individual's sense of connectedness.

Nature relatedness thus explains human-nature relationships as an array of multi-level connections, naturally formed between humans and the non-human world. It covers the affective, cognitive, and experiential aspects of individuals' connection to nature. At the affective level, it represents an 'internalized identification with nature, reflecting feelings and thoughts about one's personal connection to nature' (p.724). At the cognitive level, it reflects an 'external, nature-related worldview, a sense of agency concerning individual human actions and their impact on all living things' (p.724). Finally, at the experiential level, it reflects a 'physical familiarity with the natural world, a sense of comfort with and desire to be out in nature'. (p.725).

Nisbet et al. (2009) argue that is not simply about love or attraction to the most pleasant aspects of nature, but also an understanding of the aspects that are not even aesthetically appealing. Nature relatedness, therefore, reflects a greater sense of awareness and understanding of all aspects of the natural world, even those that are not attractive or of human utility (Restall and Conrad 2015).

By anchoring our work in nature relatedness, we can see regenerative enterprising as an environmental experience, inherent to humans, rather than as a transaction in search of ecosystem services (Piccolo et al. 2018; Washington et al. 2017). It is the work that humans do in connection with nature. As a multi-dimensional construct, it allows us to observe how regenerative enterprises treat and engage with nature (Nisbet and Zelenski 2013; Nisbet, Zelenski, and Murphy 2009; Schultz et al. 2004), how emotions can trigger engagement with nature and how concerns for nature may manifest in human behaviour. This opens a new multi-level space for the examination of the work regenerative enterprises do.

3 Research setting and methods

To answer our research question, we conducted an ethnographic study of a regenerative farming enterprise in rural Southern Patagonia (Chile), called *Fundo Panguilemu*. The founders explain Panguilemu's approach to environmental regeneration.

> Fundo Panguilemu is dedicated to regenerative farming with the goal of emulating nature. We work to maintain and improve the health of soil and water, increasing biodiversity, respecting all life forms, and sharing the magnificence of nature. Our land management practices result in a significant amount of carbon sequestration, which is vital to climate change restoration. We are a lighthouse inspiring people, demonstrating innovation in good business practices, production of healthy food, and preserving local culture. *Jose (51), Founder of Panguilemu. Informative yearbook 2020.*

Fundo Panguilemu is an extreme case, located in a remote area in the Aysén Region,[3] eight miles from Coyhaique. Panguilemu farm is 1,064 hectares; 500 of which are destined for pasture, and the rest is kept as Native Forest (Nothofagus). Panguilemu was founded in 2013 by Jose and Elizabeth, both with extensive experience in regenerative sheep farming. Jose is a veterinarian with more than 20 years of working as a consultant in natural sheep/cattle farming, regenerative farming, and farm business development. Elizabeth has international farming experience in New Zealand, Canada, Sweden, the United States, and Patagonia. Before founding Panguilemu, she managed Sección Río Grande Cameron, with 30,000 sheep in Tierra del Fuego. Panguilemu uses Holistic Management (Savory and Butterfield 2016) to guide farming and environmental restoration practices, which is a decision-making framework for livestock management and the development of regenerative projects.

> Holistic grazing is the idea that by mimicking the rotational patterns of wild grazers and intensively grazing large numbers of animals we can reverse desertification, increase the health of soils, and sequester carbon.[4]

Jose, Elizabeth, Domingo (farm foreman) and a group of volunteers look after 1,800 sheep, 50 beef cattle, 200 breeding heifers, and a small family-run farm. They are assisted by other members of staff, working in the hospitality side of the business. The number of volunteers varies between seasons, along with the activities required to run the farm. During the winter season, the number of volunteers rarely exceeds two people, but the number grows to eight during the summer.

They offer a range of products and services including organic produce, organic grass-fed beef and sheep, regenerative sheep & fine wool, and firewood, as well as ecotourism, training, and science (Holistic Management) education. Over our data collection period, most of Panguilemu's business units have been growing. On the farm side of the business (i.e. sheep meat, beef, wool, firewood), three major customers concentrate 70% of their sales, and the other 30% of the production is sold to small local restaurants. This generates profits but also tensions because not all activities create the same level of income. Some products (e.g. organic vegetables, grazing eggs, fishing) are difficult to produce and sell during the winter with maximum temperatures averaging 6°C. The number of tourists is also growing year after year, mostly driven by foreigners interested in the landscape and regeneration. All in all, the business has proven financially viable, they can save enough for the winter season, and invest in improvements to the farm, such as a new fencing electrical system.

At Panguilemu, they seek to promote a change in the agri-food model, focused on sustainable, and responsible production. Using Holistic Management, they are advancing a novel land-to-market model for families, small stores, restaurants, and lodges. In the context of Holistic Management, Panguilemu is considered a demonstration farm, given the advanced ecological practices and the results they have achieved in terms of environmental regeneration.

> Do we want a model that makes our planet sick, or destroys, or a model in which the regeneration of the earth is central, along with the quality and safety of the food produced? We live and work to regenerate nature, the global economy, and people's hearts while inspiring more people to do the same. *Jose, Founder of Panguilemu, Interview in November 2019.*

In terms of regeneration, their approach has also proven successful, increasing pasture productivity and carrying capacity by 300% in three years, improving biodiversity and carbon capture capacity in almost 100% of the soil. Improvements have been captured using Ecological Outcome Verification (Appendix A); a protocol developed by the Savoury Institute for monitoring land health, giving a holistic look at both leading and lagging indicators. The outcomes have been verified by experts at the Savoury Institute and then corroborated by researchers from a local university.[5]

> We demonstrate and inspire others with a successful business, strong ethics, supporting the health of the land, capturing carbon, increasing quality of life, and giving dignity and hope to rural activity. *Elizabeth (42), Founder of Panguilemu. Business files March 2020*

Observation and information collection

Using observational methods (Arino, LeBaron, and Milliken 2016), we were interested in gathering first-hand knowledge (Whiteman 2010) of localized actions and interactions, between the firm, the family, and nature in the pursuit of environmental protection and business performance. Our data collection was inspired by Gherardi's (2019) work on affective ethnography. We took a holistic perspective, focusing on how elements on-site (founders, fields, animals) are entangled and what our bodily experience can tell us about what we were seeing. We also reflected on Whiteman's 2010 and Guthey et al'.s (2014) work, who emphasize that to truly understand interactions in socio-ecological contexts, first-hand situated knowledge is essential. By bringing together 'sense of place' and 'lived experience', we were able to develop a deeper, more grounded understanding of regenerative work. Whiteman (2010) argues that nature can and should be an intrinsic part of qualitative research on organizations and the natural environment. Such an approach is central to understanding how nature and the enterprise interact with each other in regeneration activities, as the enterprise understands and makes sense of the problems at hand and formulates decisions to tackle them.

Our data was collected from July 2019 to February 2022 (Appendix B)[6] First, the first author spent one week at Panguilemu in July 2019, experiencing the farm and getting to know the founders and workers. We conducted in-depth interviews prompting Jose and Elizabeth to share their experiences as conversations, but we did not guide the conversation towards our research question. Through these interviews, we captured personal experiences, the founding of Panguilemu, approaches to environmental regeneration and protection, relationships and interactions with nature, and farm management practices. Several of these conversations were recorded. We also engaged in more casual conversations while walking around the estate with both of them, which also included repairing fences and sheepherding. These were not audio-recorded, instead, we collected evidence using field notes, video recordings, and photos. These can be seen in the exhibits below and a selection of videos can be found in the supplemntary section of the article. [7]

During interval 1, between July and October 2019, we kept close and frequent contact with the family and began to make the arrangements for the second, more extensive, data collection effort.

In November 2019, the second author travelled to Panguilemu to work as a volunteer for 35 days, living with the founders for such a period. We collected a vast amount of data using a variety of techniques, including participant observation, field notes, formal interviews, and casual conversations. Participant observation was done mostly during working hours.[8]

We also captured information during Holistic Management training and grazing planning sessions and through conversations with the founders, workers, and volunteers at different times of the day. Training and planning sessions (See Exhibit 1) are instances where traces of human-nature relationships can be evidenced as part of a broader setting and involving a wider range of stakeholders, thus operating as a rich source of data. This allowed us to increase the thickness of the research material and derive a more holistic and deeper description of the phenomenon.

Exhibit 1. Holistic management training and grazing planning.

Photo shows José leading a Holistic Management and Management training on agro-business models. Seven Argentine farmers and their families took part. Most farmers expressed concerns about how to manage animals to adapt to climate change and generate business profitability. The workshop covers theoretical foundations, practicals, and field visits.

Photo shows collective grazing planning, including owners, volunteers, and assistants. Elizabeth coordinates activities with three foreign volunteers.

We paid attention to how memories, experiences, and daily interactions with nature relate to the founders' identities and potentially influence their attitudes and behaviours towards regeneration. Both interviews and informal conversations were focused on the daily ecological work carried out by the organization. We also included reflections on emotions and physical work in isolation, as well as the pressures the business had faced during the first years of trading, both operational and financial. This information was gathered in a shared digital diary (Appendix C), which included notes, audio recordings of casual conversations, videos, and photos. As with the first round of data collection, we also conducted semi-structured interviews with all our participants (see details in Appendix B), to develop a more structured understanding of their views, emotions, practices, and experiences. We prioritized the use of video recording during the day, as it allowed us to capture different areas of experience and knowledge (LeBaron et al. 2018; Toraldo et al., 2018). During both visits, we collected over 800 photos, 502 minutes of audio recording, and 300 minutes of video recordings.

In interval 2, during 2020, we remained in contact with the founders and engaged in casual conversations, at least once a month. We talked with Elizabeth directly via WhatsApp and used Facebook and Instagram to engage with their posts and news. We talked about the farm, weather conditions, and mostly about the animals, and how their dogs 'Tato', 'Judas', and 'Morita' were doing (see dogs in action in Exhibit 5). We often talked about their horses, 'Morena' and 'Ali', particularly about 'Ali', who worked with the second author during his visit. We also talked about their projects and the challenges the enterprise was facing. Although the business was profitable, growing interest rates started squeezing the business's cash flow and threatening the operation.[9] This opened an opportunity during interval 2 to talk about the search for new investors, the alternative strategies being considered to diversify the portfolio, and their ideas for science education and regenerative tourism through partnerships.

In February 2021 we re-engaged with the founders to share our insights on human-animal mutualism. We shared an early draft of this manuscript and interviewed them three weeks later. We were interested in capturing their reactions to our inferences and the use of visual evidence and collecting new information to refine our insights and early theorization. Elizabeth commented, 'I loved the mixture of a concrete explanation with the mess and craziness we experienced daily here [. . .] I feel honoured [. . .] proud of seeing how you have described what we are doing, and thankful of course [. . .] I would like to share it with a few friends working in regeneration and environmental protection'. The financial situation at that stage remained uncertain yet the enterprise was still managing to stay afloat.

Finally, in January-February 2022 we expanded our data collection effort further. We had the opportunity to spend three more weeks at Panguilemu, discussing the state of human-animal mutualism with the founders. We went beyond the firm and interviewed and observed a range of external stakeholders who have been involved with Panguilemu. 60 minutes of audio recordings were added. To complement the interviews, we observed interactions between the family, their employees, clients, other organizations, and volunteers and paid attention to how new volunteers and workers were getting involved with animals. In this last round, we also recorded 30 videos capturing human-animal relationships, of around 30 seconds each. 300+ new photos were added to the project collection.

We conducted in-depth interviews with four clients and suppliers (Ian, Jano, Nico, and Claudia) with two aims: revisit early insights and gain further depth in our examination. To gain a more holistic understanding of the phenomenon, we collected similar information from these different participants, which we then compared to the data gathered earlier from the enterprise. We specifically observed how external actors – clients and suppliers – engaged with Panguilemu's practices and examined their perceptions regarding the business itself, in operational and financial terms. All in all, this last stage allowed us to calibrate our early observations and avoid romancing the role of Panguilemu, which is problematic in rural entrepreneurship research as 'it has had detrimental effects in theorizing about rural' (Gaddefors and Anderson 2019). We discuss these issues in the boundary conditions section below.

Reflexivity, data sensemaking, and collective interpretation

We approached our data analysis in an iterative, inductive manner, and consisted of four stages: sensemaking, initial coding, the development of conceptual categories, and abductive theorizing.

Stage 1 Sensemaking and reflexivity between authors. This stage started after our first visit in July 2019 and continued until early 2020. Using the digital diary, the authors shared their experiences with each other during and right after the data collection period. During data collection, we [authors] remained in touch via WhatsApp, sharing daily experiences and insights from our fieldwork. This was instrumental to gain familiarity with each other's experiences and enable a more fluid collective sensemaking. Although we wanted to better understand relationships and interactions, at this stage we did not focus on any particular question. Instead, we let experience and emotions guide the materialization of empirical insights. While we included observations and personal reflections, we differentiated them with the aim of not reinterpreting the observations twice, since personal reflections are already interpretations of observations made on-site.

We immediately noticed the relevance of close interactions with nature, not only as part of Holistic Management but also how important they were to the founders and the operation of Panguilemu more broadly. For example, we observed emotional connections with their horses and dogs, a profound admiration of predators, and expressions of happiness when talking about the recovery of the grasslands. After reviewing the literature on regeneration and nature relatedness, empirical insights began to articulate a novel phenomenon, so far not explored in the literature. We noticed that the connections they formed with nature were a key facet of the organizational life and central to regeneration. We noticed close connections between Panguilemu's founders and workers and their animals, and a strong reliance on each other (See for example Exhibit 1 and Exhibit 5). To nature also, not only in terms of how close and deep the interaction was but also in terms of how emotions were being triggered due to the aggressiveness and cruelty of nature, as interpreted by founders, workers, and volunteers. Finally, we were intrigued by how they were letting things go, to allow nature to do its work. These insights guided our coding procedure.

Stage 2 Initial coding. In the early stages of coding, we noticed that verbal accounts were guided by a particular view of natural ecosystems and their role in them, which seemed to emerge from their

experiences and the relationships they have formed within the farm. Coding was guided by Nature Relatedness and thus focused on the affective, cognitive, and experiential interactions they had formed and still maintain with nature. First, interactions are described as meaningful, long-lasting, and mutually beneficial, expressions such as 'When you know the place, you understand why you want to be part', 'Restore, and the native trees reappear' and 'In my free time I go to the forest, I leave oxygenated'.

Embedded in those interactions, we observed an interesting presence and acceptance of 'emotional ambivalence', which was surprising given the predominant idyllic view of nature. They normally reflect on both the positive and the negative aspects of being too close to nature. They seem to like the links they have formed with non-human species, noting for example that 'The birds help them build the forest" or that 'Nature was giving them the wisdom they needed' to regenerate and protect. But at the same time, we noticed expressions of dislike, when nature was 'fighting against' them, because 'it does not want to be looked after'. Particularly facing harsh weather conditions or the sheep's natural predators. Then, nature was being 'harsh' and animals 'cruel' and 'cunning', yet they knew that 'this is the way' of nature. We also coded their ways of 'thinking' nature, and the relationships humans have established with it, which have been to a large extent 'damaging', in their view. They think 'nature had everything under control', then 'humans came with a linear thinking' and 'began to destroy the natural behaviour of animals'. It did not make sense to them that 'The earth is 70% water, and we have drought'. They call for a 'change to the traditional paradigm' (i.e. economic extraction model), and they see themselves ready to take on the challenge because they 'are trained [cognitively and emotionally] for other priorities'.

In many instances, relationships were described from an experiential point of view, such as 'doing regeneration is more rewarding than talking about it'. Upon reflection, we noticed that these affective, cognitive, and experiential connections with animals converge around a sense of belonging to that place and the search for purpose. This led us to derive a pivotal empirical insight in our research, the idea that they engage in practices that allow them to constantly work together with animals and, through these practices, form a deep and mutually beneficial relationship with them to regenerate and protect the proximate natural ecosystem.[10]

Stage 3 Developing conceptual categories. In the third stage, we moved from initial coding to the development of conceptual categories. We looked at distinct aspects of their work and the relationships they have formed with their animals. Our analysis converged around three practices, which we argue are central to both regeneration and the way Panguilemu was conducting its business: 'Joint rewilding', 'Ambivalent relationality', and 'Task interdependence'. In Table 1 we provide data structure underlying the three practices. Combined, these practices offer an empirically grounded view of relatedness in regenerative enterprising, as performed by a running rural enterprise. We noticed that when taken together, these practices allow for the construction of a reciprocal relationship between the enterprise and animals, in pursuit of environmental regeneration and business performance. In Panguilemu, the way practices construct relationships appears to move away from contemporary thinking, which tends to position humans in a dominant position over animals.

Stage 4 Abductive theorizing. In the final stage, we engaged in abductive theorizing to elaborate on how these practices operate together to support and foster regenerative work. *Abduction* refers to an inferential creative process of producing new theories based on surprising research evidence. Abductive theorizing occurs when 'the researcher is confronted with puzzling facts, but unable to cleanly apply a theory or theoretical perspective to readily explain them, uses the pattern of results to conceive a plausible explanation' (Bamberger 2018, 4). Abductive theorizing is done through iterative conversation between research insights and theory, when insights are seen as similar to other phenomena already experienced or explained (Timmermans and Tavory 2012). In this sense, abduction is fundamentally conjectural because it seeks a situational fit between insights and extant knowledge. In doing so, it narrows down the range of plausible explanations and provides

Table 1. Data structure.

Illustrative quotes	First-order concepts	Practices
This for me was like, of course, nature had everything under control, and we as human beings and our way of thinking so linear, those are my cows, my sheep, my horses, and those are yours, and we put a fence, so, they cannot move, they are in a paddock, still, and how I spent my money to buy that little sheep …	Betraying nature	**Joint rewilding**
… and a cougar comes, and I will kill him so that he does not eat my sheep, and with those two decisions we have destroyed the natural behaviour of the animal, and the same happens with plants, the same in the soil, and the same in the water cycle, we have not understood, and how we are so linear and square, and the economic part, because I have to protect what is mine, has made us destroy everything	We have destroyed the natural behaviour of animals	
Even the most traditional medicine is beginning to understand that we are beings who need nature *[Nature's wisdom gives you what you need]*, that which you describe, and you feel good because you are returning to your simpler being, and in connection with other simple beings in nature, and we all need that	Return to nature	
I am not going to be here forever, the only thing I can do is leave the soil better, and leave them [their children] with a love for the same, after what they do is their thing, but they know where the food comes from, they do not think that the milk comes from a box, or the eggs from the supermarket, I feel that I can leave them a space that is in much better condition than when we arrived, and an understanding of what is real and important under our values	Transitory caretaking	
We are not using chemicals, the animals are doing well, the fields are doing well, the plants are doing well [. . .] there were a thousand things we can improve, but here I am doing something I can be here and be well.	Benevolence	**Ambivalent relationality**
[But] I had never earned so little money, I had lived in such harsh conditions, can you understand, there were many things that were crude …	Harshness	
… but deep down, it was fine, and that hooked me, right now, well I am still here [beyond] the three months that I was supposed to be to take care of the newborn sheep.	Maintaining relationships	
For me, having the possibility of living in such a beautiful place, where I can raise my children, in nature, you have already seen it … but, what most leaves me satisfied is seeing the children outside, with the dogs, horses, finding insects, not being afraid, and bringing me insects, saying: 'Look, mom, we found a new one' [. . .] and we send the photos to Mauricio [a friend who studies the behaviour of insects], and ask him: What is this insect called? It is the most important thing for me.	Accepting the nature of relationships with animals	
Next to the river, that was sand, with some lupins, and I went with my dog, I went over there, I would gather all the animals that were in that pasture, gather them, and move them down there, and with my dog, I would keep them there, until it was night and then I would return home. The next day I would take them to another side, and thus, playing with the tools, and today in that pasture you do not find any bare ground, all that part is green, and with grass with clover, grass, noble species, the cows did that	The animals help me build the forest	**Task interdependence**
My dog is 'Tato'. The first day I said, I like this dog … because of the connection between you and your dog. Tato came to the airport in Punta Arenas to pick me up. That is love at first sight, because of his personality he is hardworking, strong, but very friendly. Tato works (with me) until today and he is old. Whatever I do, it is always with Tato.	Working together	

a 'grounded basis' for novel theorizing (Bamberger 2018). Following this logic, we returned to the literature to explore a situational fit between insights (i.e. joint rewilding, ambivalent relationality, and task interdependence) and Holland & Bronstein's, 2008 idea of mutualism and multi-level connections with nature (Nisbet, Zelenski, and Murphy 2009). From here, we abductively conceptualize this new form of reciprocal relationship as *human-animal mutualism in regenerative work*. We put forward a model explaining how the three practices get tangled, how they allow for cognitive, affective, and experiential updating, and how, through the latter, they connect humans and animals in regenerative entrepreneurship.

4 Findings

Joint rewilding

Rewilding is about letting nature take care of itself, enabling natural interactions capable of repairing damaged ecosystems and restoring degraded landscapes. For our presentation, we borrow from conservation rewilding, which seeks the re-establishment of missing animals in the wild, as well as ecological interactions (Biermann and Anderson 2017). When species retake their roles, it makes nature wilder, restoring migration, predation, and grazing. 'Through rewilding, wildlife's natural rhythms create wilder, more biodiverse habitats'.

In regenerative work, *Joint Rewilding* refers to the shared experience and action of returning to nature, so that both - humans and animals - can re-connect with their wild behaviours, re-arrange relationships with each other, and re-orient their roles in a way that is conducive to the regeneration of natural ecosystems. The rewilding of humans is not about returning to a hunter-gatherer age. Rather, it involves (re)examining cultural paradigms and reflecting on the how and why of human actions and interventions. It also involves noticing how the enactment of such a paradigm affects human well-being, considering how a paradigm change might allow humans to reconnect, physically and emotionally, to nature and cooperate in regeneration. Nicolas, an expert in agricultural production from Patagonia's Universidad de Aysén, reflects on Panguilemu's approach:

> On other farms, if a sheep is lame, people go and look after it, and they suffer from much more stress with that treatment, compared to what can occur normally [in nature]. Here [Panguilemu] there is an awareness that nature has a way of functioning, and if there are animals that do not perform well in this environment, well. . ., they will become part of the cycle, and contribute to the fertility of the soil with their bodies. *Nicolas (40) Director Technical-Professional Agricultural Production, Universidad Austral, Patagonia Campus Chile. Interview in February 2022.*

Elizabeth and Jose are aware of their Western cultural heritage, so they appear to make conscious attempts to critically reflect on their own paradigms. We observed that *Joint Rewilding* starts with the recognition that humans have betrayed the natural world. Elizabeth believes that we have destroyed the animal's natural behaviour, because 'previously nature had everything under control' and then 'we came with our linear thinking'. They think that reverting such human betrayal is essential: 'We changed their natural behaviour, and we need to heal that relationship so that the animal behaves like an animal, and each can perform their roles'. Only by stepping back from contemporary human rationality, humans and animals can return to wild behaviour and the process of environmental restoration and protection begin. In Exhibit 2, we present the connection between Elizabeth and Domingo with their horses, showing the new interactions resulting from a joint rewilding.

Exhibit 2. Joint rewilding.

Photo 1: Domingo and Gaucho
'You wouldn't believe it, but the connection between the human and the horse is surprising. Many times, that connection begins when you both see and look at each other. I have prepared "coaching" with horses on more than one occasion, and it is fascinating and wonderful when you manage to see the human connecting with the origin, with a pure animal, without evil'.

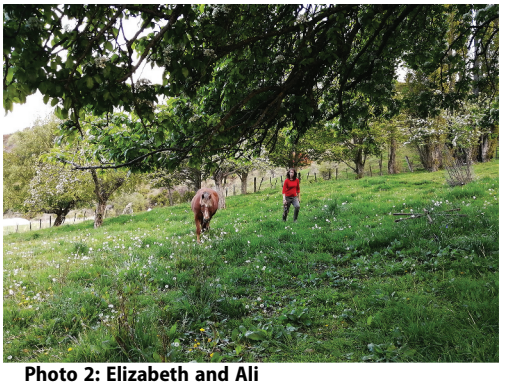

Photo 2: Elizabeth and Ali
Elizabeth is talking about the connection with her horse Ali: 'It was a very deep feeling, on more than one occasion I felt that we were one with Ali'.

Watch video 1: Golondrinas

Video 1 shows the effects of mutual rewilding on environmental restoration. 'Look at the swallows! (Golondrinas in Spanish) [. . .] Do you know why are they here? There are loads of new moths, that came to live in the grasslands. They [the swallows] fly by and with their wings, they scare the moth. Wow!'

Videos can be found in the supplementary section of the article.

Video 1 (Golondrinas) in Exhibit 2 shows Domingo talking to one of the authors about the number of swallows flying around. They explain that the swallows appeared when the moth came back, which happened because the sheep began to move together as a wild herd enabling faster recovery of the grassland. This was only possible through a return to wild behaviour.

Key aspects of their belief system (i.e. stemming from holistic management) seem different with *Joint Rewilding*. We noticed the enterprise disregarding linear thinking, renouncing its ownership over ecosystems, retreating its agency, and embracing transitory interventions and caretaking. In that sense, *Joint Rewilding* involves scaling down and stepping back. They criticize the grand narratives of sustainability that accompany global efforts, e.g. the Sustainable Development Goals. Instead, they see the process of 'going back to being together' as a humbling one where humans are back to 'being little', 'do not own anything', and 'can do very little by themselves'.

> When I was a child [I understood that] you cannot be the owner of the land, you are a little thing here, a small drop of time, we can take care of the land here, I take care of this space, but you are not the owner, it is stupid. *Elizabeth, Informal audio recording during fieldwork in November 2019.*

They believe that, generally, people keep things apart and live in different worlds: the family and values world, the natural world, and the business world, where people can do things in completely different ways. The problem, they argue, is that people can be happy in one world, but unhappy in the other one. Through *Joint Rewilding*, these worlds appear to merge: 'Your family, your animals, your work are part of the same'. As species reconnect, the founders believe that nature takes a leadership role, giving the enterprise 'the wisdom it needs' to conduct its business and restore and protect nature.

> One of the recipes it [nature] gives you is a forest bath so that you can go and be connected with nature for an hour, because many of the problems that we have today in the psychological and health part, are due to complete disconnection with nature. *Elizabeth, Informal audio recording during fieldwork in November 2019.*

Joint Rewilding also reconstructs what counts as 'real'. Elizabeth and Jose describe the presence of life (post-rewilding) as something 'real', and the absence of it (pre-rewilding) as something 'fake'. They seem to use such conception as a way of reconstructing their reality. They both stare when they touch the ground or a tree, they say 'This is real'. The rebuilding of the real in Panguilemu is fundamentally experiential but also affects cognitive and emotional aspects of the enterprise, embodied within the founders, volunteers, and workers. As Elizabeth explains in reference to life at Panguilemu.

> Everything is real to me, there is nothing plastic, there is nothing fake, the connection is very beautiful [. . .] Here I am part of something real, that is working well, we are not using chemicals, animals are doing well. *Elizabeth, Informal audio recording during fieldwork in November 2019.*

Ambivalent relationality

With *Joint Rewilding*, we notice a counterintuitive form of relationality. We observe the founders experiencing contrasting emotions towards nature, caring about and, at the same, disliking nature. 'We care about it and nature does care about us, but nature is cruel'. Ambivalence is inherent to the human experience. Organizational literature describes ambivalence as something negative, which tends to be actively avoided by organizations. However, in the case of Panguilemu, instead of reducing or avoiding ambivalence, we observe the founders, workers, and volunteers embracing conflicting experiences towards nature. The presence and embracement of ambivalence are counterintuitive because nature tends to be idealized and experiences in nature are seen as inherently positive and pleasant. At Panguilemu, on the contrary, they seem to reject such an idyllic view of nature, which tends to dominate the narrative built to depict environmental restoration.

We label this *Ambivalent Relationality*, which can be of two types. First, the simultaneous embracement of beauty and cruelty in nature. During our fieldwork, we noticed that comfort, benevolence, pain, and ferocity coexist. 'Nature always provides what you need, and that is why we must take care of it' Elizabeth often mentioned. However, 'Nature can be very cruel', she kept reminding us. Throughout the day, we observed both founders and workers referring to the horses as 'Noble beings', very sensitive species they say, 'You have to be sensitive to notice it', Elizabeth emphasizes. Jose worked with 'Morita', his dog; Elizabeth with 'Tato'; and Domingo with 'Gaucho'. They describe their relationships with their animals as 'love at first sight'. We also noticed the joy experienced that came with finding new insects or new birds, which are returning to Panguilemu as a result of their environmental regeneration and protection efforts. 'By working with the animals on the ground, we can connect more with nature', can be frequently heard at Panguilemu.

However, along with the positive emotional connection, we also noticed expressions of anger, regret, and frustration with some living processes. We witnessed Domingo and Elizabeth conflicted when scavenger birds were attacking and feeding on newborn sheep. It affects them not only emotionally but also has an impact on Panguilemu's bottom line, as each newborn taken away by predators means losing money. 'Birds cornered the sheep that were out of our reach, and we seldom managed to interfere'. Despite the financial impact, we observed the founders reflecting on their anger, frustration, and helplessness, emphasizing that 'This is nature' or 'this is natural selection' or 'and we should not disturb or intervene in that process'.

The reciprocal relationship we uncover is then experienced as a form of conflicting entanglement, seen as both 'beneficial' and 'harmful' by and for the organization, which we argue is at the core of *Ambivalent Relationality*. We [the authors] engaged in several conversations reflecting on why they

need cruelty and why they care about and even embrace cruelty, being cruelty a source of pain and emotional distress. We found that, in the complex emotional tissue of Panguilemu, they have learned that death is a condition for life in regeneration, which necessarily combines kindness and cruelty, as judged by humans. Because of that, they tend to remain open to learning about the cruel side of nature and letting it do its work. Camila, one of the volunteers, observed in reference to new cats joining Panguilemu in February 2022:

> Jose mentioned that he does not know how these cats arrived. The cat is pregnant again. She was a mother recently. No one feeds them, no sterilization. Little cats have learned to hunt grasshoppers. Jose says: the cats arrived alone, no one invited them, they would have to look for their food, or else, be food for other animals. I think it's unjust. *Camila Volunteer summer season. Informal audio recording in February 2022.*

The anecdote of the new cat is particularly revealing. The cat was left alone to return to wild behaviour. If she cannot find food, it becomes food for other animals. This, from Panguilemu's point of view, is a recognition of evolution at its best, but it is felt as 'cruel and unfair' by one of the volunteers.

In Exhibit 3, we show how Panguilemu embraces beauty and cruelty in nature. Video 2 (accepting cruelty) shows how caring and cruel the sheepdog appears to be. In that situation, she (the dog) would eat the lamb she had been looking after for days, and that is both beautiful and painful to witness; but neither the founders nor the volunteers would want to intervene. Photo 4 shows two foxes stalking the herd. Elizabeth shows ambivalence in her relationship with them, loving them, and admiring them, but she also despises the fact that they will likely eat the newborn: 'Foxes . . . they are very cunning', she says. In our digital diary, we recorded the following entry:

> On our way there [to the herd] we saw two foxes. We were in the pickup truck, and Elizabeth stopped so I can try to take some pictures (of the foxes). It was amazing, because the foxes stopped, looked at us, and it seems they even posed for the camera. I think they feel confident, I told Elizabeth. She replied: "It looks like they are boyfriend and girlfriend. They are smart, and they must be waiting for the opportunity to hunt. They are very agile, and they know how to camouflage (in the bushes), she mentioned as she looked at them in amazement. *Field note in November 2019.*

Exhibit 3. Ambivalent relationality: loving and accepting cruelty in nature.

Watch video 2: Accepting cruelty
In video 2, the sheepdog is looking after a lamb that stayed behind, who has so far been unable to keep up with tGhe herd. The dog will stay with the lamb for days, day and night, but if the lamb is too weak to continue, the dog will eat the lamb so that it can continue looking after the rest of the herd. Neither Jose nor Elizabeth would intervene, however cruel it might seem and how costly losing a lamb might be.

Photo 3: Chicken coop destroyed by wind
(After talking about their love for nature) . . . we couldn't talk much more. A chicken coop was blown away by strong winds and had to be removed from the site (Field note). Then Elizabeth says: 'We always laugh when things are hard, and there are challenges, one after another, since there were a lot, with José we say, well, there is another chapter for the book, we are in a story, but one cries, you have to laugh because, there are a thousand moments, and reasons, excuses to give up, it has not been easy at any time'.

(*Continued*)

Exhibit 3. (Continued).

Watch video 3: Pain and wounds

In the following *field note*, the second author reflects on video 3: 'Today was an incredible experience. Very crude, I felt very tired, I was very cold at times, I was wet and with ripped jeans, I was hungry and sore. However, I managed to understand the abysmal difference between writing about regeneration and experiencing it. It is not easy, not at all. "Domingo" has been doing this for a long time. He told me about the pain in his bones, his muscles . . . the wounds, and even so, he calmly mentions that all of this is his life'.

Photo 4: Foxes hunting lamb
'Foxes . . . they are very cunning'

Videos can be found in the supplementary section of the article.

Second, embedded in the embracement of beauty and cruelty in nature, we noticed a simultaneous like and dislike of animals, as well as a simultaneous like and dislike of the ecosystems that are being regenerated and protected. They argue 'Nature is not a passive recipient of interventions, and sometimes nature does not want or does not need to be looked after'. Also, a simultaneous liking and disliking of the pains and wounds inflicted by working with a variety of animals in regenerative sheep farming.

From our field notes, we can explain how this form of ambivalence is felt, where we reflect on how we have been experiencing nature since arrival. Panguilemu is in an isolated area of Southern Patagonia. Although we were approaching the summer, we did not have many sunny days. The rain was very intense, and we had to work with the animals regardless of how harsh the weather conditions were, as experienced by us. We also had to assist one of the sheepdogs, who lives with the sheep permanently since he was injured after a wild cougar attacked him (judging by the marks on his head) whilst protecting the herd. The strong winds that destroyed the chicken coops (Photo 3 in Exhibit 3) also destroyed the fences that keep the animals working together. This was deeply problematic as the regeneration process was interrupted, but 'it was nature's work, so there must be a reason for it'. As Elizabeth reflects: 'There were many things that were crude, but deep down it was fine'. Nature triggers frustration and fatigue and leaves founders, workers, and volunteers wondering about the functioning of nature, despite having extensive collective experience in regeneration. They say: 'We are not so important, there is something else'. Yet, those events are

Exhibit 4. Task interdependence: Supporting each other and working together.

Photo 5a

Photo 5b

(*Continued*)

Exhibit 4. (Continued).

Photo 5 (sequence): Relationship with sheep

This sheep has an opportunity in his life, to destroy the soil, or to regenerate the soil, and that sheep [photo 5a] regenerated the soil. Then, the meat that we eat can either damage our health [referring to a sheep that destroyed the soil], because we would have injected it with antibiotics, anti-parasitic, steroids . . . there are a thousand things that the sheep would have taken under 'conventional management'.

This one [photo 5b] here (on the contrary), first regenerates the soil and then improves our health [5c].

Photo 5c

Watch Video 4: Domingo and the dogs

Video 4 shows how Domingo and the sheep herding dogs are working together. They must guide the cattle to their corresponding area. Due to fence failures, cattle are out of place. The weather is adverse, and the only form of communication is the language created between Domingo and the dogs. Through sounds, short words (slow down, give it, watch out, etc.), whistles, and signs, the dogs understand what their job is, and Domingo must direct them in the most efficient way and thus not waste time or energy.

Watch Video 5: Jose and the dog

Video 5 shows Jose and the sheep herding dog working together. It is a different language, unique between José and his dog. José uses sounds and expressions like 'uyuy'; 'aaah'; and while he whistles, his dog understands that they must lead the sheep. No sheep can be left outside the herd. They remain quiet, move slowly, and do not flee quickly. There is mutual trust, they know this is a joint act, between José and his dog.

Photo 6: Relationship with dogs

This photo shows Domingo with his three dogs. They work and live together. One of them, 'Gaucho' (white dog) shows incredible skills. When Domingo kills a sheep for human consumption, Gaucho is the one who gets the liver, heart, and lungs as food. Domingo generally mentions that these are Gaucho's prize for his work.

Watch Video 6: Chicken coops

Video 6 shows Ian slowly moving the chicken coop, as per Holistic Management principles

Videos can be found in the supplementary section of the article.

taken as a source of knowledge, so they can learn how to work with nature. They can overcome their limitations and discover more animals and their roles, such as native owls and foxes, and ultimately understand how nature makes us part of it.

> There are a lot of *Jotes* (Chilean vultures) flying around the place. Elizabeth tells me about the anger that she feels because of them, on many occasions, they attack newborn sheep. However, she says, we can't do anything about natural selection. *Field note in November 2019.*

Task interdependence

> The animals are working together with us, there is no violence between them, it is their own desire, to support each other, that we go as a team, we have to move the sheep from here to there, something that neither of us (human, horse or dog) can do by itself, all three are needed, they are one thing. I don't know how to describe it, but it is the coolest thing there is. *Elizabeth, Informal audio recording during fieldwork in November 2019.*

The work that humans and animals conduct at Panguilemu is deeply intertwined. Regeneration through reciprocal relationships involves working closely together and looking after each other, daily, which we label *Task Interdependence*. We observe this in their daily routines, which seem to alleviate somehow the tensions triggered through *Ambivalent Relationality*. To explain the latter, the founders reflect on their worldview, portrayed as a paradigmatic shift in *Joint Rewilding*. Through it, they refer to nature as a spiritual being, that sustains human life and all living beings that inhabit there. In our reflection, this finding took us back to nature relatedness. We frequently heard founders and workers describing joint actions as: 'needing nature', 'connecting with nature', 'following the wisdom of nature', 'imitating nature', and 'taking care of nature'. It is an interesting sequence from needing to imitating to looking after, reflecting co-dependencies at work.

Videos 4 and 5 (Exhibit 4) show Domingo and Jose working in synch with their dogs, relying on each other to execute the tasks at hand. They have created their own forms of communication, different types of whistling, and different commands. The dogs, however, know when to stay down and quiet, apparently disobeying their commands. Domingo and Jose explain that they trust their dogs' instincts, which they portray as a conscious judgement and a manifestation of wisdom in the execution of the task.

This is salient in the relationships they have formed with their working animals – herding dogs, sheepdogs, and horses – where *Task Interdependence* is active and visible. But we also noticed *Task Interdependence* in their relationships with other species that seemed irrelevant to us on the surface. Our encounter with swallows and moths was revealing to us, in terms of how *Joint Rewilding* creates affordances for the emergence of *Task Interdependence*, which then reinforces *Joint Rewilding*. As we explain above, swallows appeared when the moth returned, which happened after the recovery of the grassland resulting from 'rewilded' human-animal interactions. Now, we can see more species interacting, working together, and relying on each other. From our fieldwork, we reflected:

> On our return from repairing fences, Domingo noticed that many swallows began to fly around us. Domingo mentioned that they are there because of the large number of insects that now live there, while Elizabeth mentioned that it is an essential characteristic of holistic management. They return only when the ecosystem is abundant, and Elizabeth mentioned that in recent times they have seen many more, and even new insects. The interconnected dynamics between swallows and the insects, plants, fungi, and bacteria, work and conduct a natural regeneration of the soil's trophic web, its quality, and fertility, while capturing carbon and creating new organic matter to keep this network healthy. *Field note in November 2019, in conversation with Domingo, Panguilemu's foreman.*

Task Interdependence was also visible in the relationships with minor species, where they seem to recognize indistinctly the value of all life forms that inhabit Panguilemu, from ground micro-organisms to seasonal insects. During a horseshoe change, one of the volunteers stepped on a spider. Elizabeth was immediately upset, and she spent a few minutes explaining in detail the importance of that spider for Panguilemu's ecological balance. She mentions:

> Do not do it again [. . .] with the animals, we work together, there is no violence between us. It is their own motivation, (we) support (each other), we go as a team. *Elizabeth, Informal audio recording during fieldwork in November 2019.*

Elizabeth stressed on that occasion that they needed their team [dogs, horses, and animals] to work together in a satisfactory and complementary way. In doing so, they look after each other and restore

and protect nature together. We observed her explaining to the volunteers that 'the animals helped (her) build the forest'. She then explained that regeneration depends on that connection and the co-dependencies and trust that species develop with each other. It is seen as a natural process, which materializes when each species plays its role and trusts that the other will do its part. Reflecting on how they get together to perform the tasks, Jose says:

> I am trying to live holistic management. It is incredible how it (working with the animals) changes the water cycle, improves the plants, improves the ground, improves biodiversity … *Elizabeth, Informal audio recording during fieldwork in November 2019.*

The relevance of *Task Interdependence* and caretaking is quickly assimilated by newcomers: volunteers and workers. We noticed this during our last visit in 2022 when the volunteers were tasked with transporting the chicken coops. The chicken hens rotate through the fields every seven days, following the same Holistic Management principles guiding wild herding. The process of moving them around is usually tedious. However, chicken in freedom and quietness, and fed by fresh grass, is normally more productive. Ian (worker) and the volunteers move the chicken coops carefully, while Jouni (volunteer) moves the fences in collaboration with Judas (caretaker dog). Jouni mentions that Ian is very concerned about the chickens' health because they are 'emotionally unstable'. The chickens are transported inside their coops to avoid injury and trauma, and he (Ian) proceeds with care, slowly (see video 6 'chicken coops'), so that it does not affect their behaviour. 'If a chicken is stressed, the egg will absorb the stress, and later on, you will eat that stress' observed by the volunteers reflecting on broader human-animal interdependencies. In addition, 'they become less productive'.

Inter-species relationships and regeneration

Joint rewilding, ambivalent relationality, and task interdependence are constitutive parts of regenerative work and are thus relevant to ecological restoration and the associated outcomes, such as improvements in biodiversity and carbon capture capacity. In reflecting on the desertification of Patagonia, Jose explains why working with animals is central to any regeneration effort, against the traditional belief in conservation that animals (humans included) need to be removed from the ecosystem for it to flourish. This idea is alive in Exhibit 5 (video 7: more animals).

Exhibit 5. Inter-species relationships and regeneration.

Watch video 7: More animals
We need more animals, moving together, not less.
Watch Video 8: Regeneration

Video 8 shows Jose reflecting on the results of their work, in comparison to the neighbouring farm. He comments: "imagine this old man's [his neighbour] cows here, hungry as hell. The only option that they have is to use forage because otherwise, they go to the neighbour's estate [Jose's estate]. If you look at it, look, well now it is not so noticeable, but, here, if you look at the slope it seems 'bare' like dirt and here it is all with grass, both sides were the same, obviously it is still difficult to regenerate uphill, but down the slope, but this is going to be all covered, so in the end, in the long run . . . So obviously the water that falls here does indeed run [neighbouring farm], here [Jose's farm] the water penetrates the soil.

> Nothing can match them (animals), what is the point of using genetics or other fancy stuff, if we are destroying what sustains everything? So, the thing is that the key tool to recovering Patagonia from desertification is the sheep. Patagonia needs more sheep, not less. The tendency is always to 'off-load' the land. No, that's not it [. . .] (we should have) large herds of herbivores moving together. That enables faster recovery of the grasslands. *Jose, video recording July 2019.*

In Panguilemu's view, inter-species relationships on-site directly influence the restoration of grasslands, which contributes to the revitalization of the soil, and increases biodiversity, whilst reducing animal stress. This was corroborated by forestry and agriculture researchers from Aysen University.

They become aware of how nature works by being immersed in the life of the farm, paying close attention to predator-prey chains.

> Our animals are calm, they walk and take care of each other, when they walk in herds the grass begins to crush, and this creates a 'cushion' of grass. When it rains, the water is not lost in the same way that it is lost on bare ground. This cushionallows to keep the water longer in that place until the ground is able to absorb it. The more containment there is, the better, the less water is lost in the rivers and nutrients of our land. *Elizabeth, Informal audio recording during fieldwork in November 2019.*

Exhibit 5 shows Jose reflecting on the effects of forming and maintaining reciprocal relationships with animals on environmental restoration. He talks about how Panguilemu has begun to evolve because of the multiple relationships formed between them and the existing and incoming animals. He talks about the health of the soil and animal well-being at Panguilemu, in comparison to the neighbouring farms. In video 8, he emphasizes:

> So, if you also look at here, look, these, for example, here, these [pointing to the soil] are armadillos or Chingues [Chilean skunk] that have been here, and there you see horse footprints, then many more bugs here, the fauna is here, because obviously (this is) a biologically active soil, this is a hole that . . . is full of worms, so the bugs are here. Look, that's an Aguilucho [Red-backed Hawk]. *Jose, video recording July 2019.*

This is also evident in video 1 (Exhibit 2) which shows Domingo and one of the authors talking about the effects of the collaborative work on both the attraction of new species, hence increasing biodiversity, and the restoration of the proximate natural ecosystem. After that brief encounter with the swallows and moths, Elizabeth commented:

> Do you know why are they there? Holistic management has surprisingly generated a significant increase in the biodiversity of the field. Many insects and animals have appeared that we have never seen before. A friend who works at the Universidad de Aysén, has found multiple insects that he has not been able to find elsewhere. *Elizabeth, Informal audio recording during fieldwork in November 2019.*

Leveraging our observations and inferences, we argue that *joint rewilding, ambivalent relationality, and task interdependence* are interdependent elements, and further contend that through combined action they can influence environmental outcomes. Collectively, joint rewilding, ambivalent relationality, and task interdependence can update the way regenerative enterprises think, feel, and experience their connections with nature, which derives mutual benefits and strengthens regenerative work. In the discussion, we leverage nature relatedness to expand our explanation.

5 Discussion

Although regenerative organizations are deeply intertwined with living natural systems (Hahn and Tampe 2021; Muñoz and Branzei 2021), we know very little about the relationships formed between regenerative organizations and the proximate natural ecosystems in their attempts to regenerate them. We uncover a form of inter-species reciprocal relationship, which is formed between the enterprise and animals to restore and protect nature. This relationship is actively formed and maintained by the enterprise through three interdependent practices: *joint rewilding, ambivalent relationality*, and *task interdependence*.

Towards a theory of human-animal mutualism in regenerative work

To advance our knowledge of regenerative enterprising, in this section we leverage our findings and the ideas of mutualism and multi-level connections in nature relatedness (Holland and Bronstein 2008; Nisbet, Zelenski, and Murphy 2009) – introduced earlier – to abductively theorize on how these practices operate together to support and foster regenerative work, which we call: *Human-animal mutualism in regenerative work*.

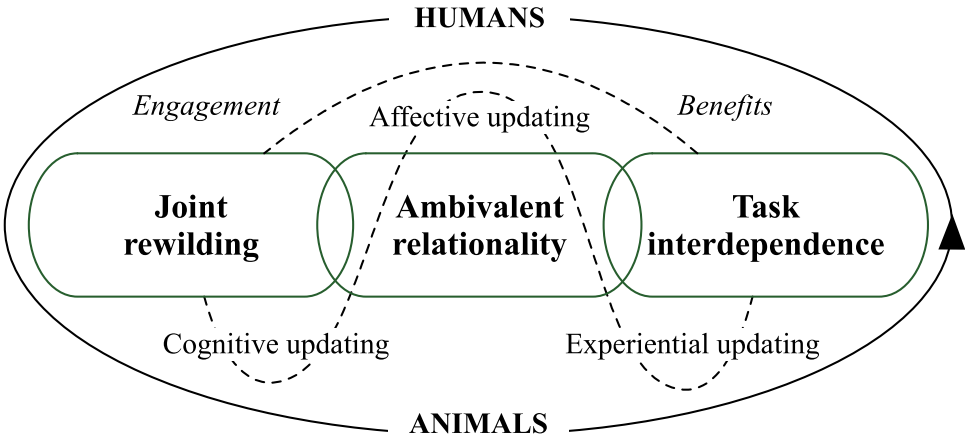

Figure 1. Human-animal mutualism in regenerative work.

Mutualism is the interaction between individuals of different species that results in positive (beneficial) effects (Holland and Bronstein 2008). In this sense, mutualism is different from cooperation or symbiosis. In natural ecosystems, cooperation involves improvements in fitness through within-species interactions. Symbiosis does involve two species living in close physical contact, but the relationship is not always mutualistic; it can be parasitic as well. In this sense, cooperation does not capture inter-species collaboration, and symbiotic relationships are not always mutualistic, and mutualistic interactions are not always symbiotic.

Human-animal mutualism conveys the idea that, in the context of regenerative entrepreneurship, the development of mutual dependencies between humans and animals, and purposive collaborative work between species, are integral to the work regenerative enterprises do and thus necessary to regenerate and protect the proximate natural environment. We therefore propose *human-animal mutualism in regenerative work* as the broad category of enterprise action aimed at creating, maintaining, and evolving relationships with other living organisms so that proximate natural ecosystems can be regenerated and protected. The relationship is characterized by awareness, interaction, and reciprocity, which are inherent to the life of the regenerative enterprise and theorized here as an active game between humans and animals, entangled in the regeneration of natural ecosystems. In Figure 1, we offer a theoretical model that explains how the practices get entangled in a process of cognitive, affective, and experiential updating. The process is actively maintained by the enterprise, strengthens the relationship, and enables regeneration.

Building on natural relatedness as multi-level connections with nature, we propose that the practices underlying *human-animal mutualism* enable a continuous updating of the cognitive, affective, and experiential connections regenerative enterprises develop with nature, which in turn derive mutual benefits and reinforce engagement.

Cognitive updating. Joint rewilding practices allow the organization to engage in efforts to reinstate ecological processes. This is done by fostering a joint return to wild behaviours, which involves constant paradigmatic rethinking - *cognitive updating* - on the side of the organization, where humans and animals are considered equals in terms of value and responsibility. *Cognitive updating* reinforces the emerging worldview and the sense of agency relating to what the enterprise can do in collaboration with animals and their collective impact on all living things. This, in turn, allows animals to return to their predation and movement patterns and the ecosystems also to return to their natural habitat succession. In doing so, they allow nature to take care of itself and flourish. In line with nature relatedness literature, this comes to challenge three key assumptions of

modernism: the identification with egocentric subjects, the belief that humans and nature are dualistically separated, and the anthropocentric belief that humans are the exclusive place of meaning and value (Kopnina et al. 2018).

Affective updating. As humans challenge their paradigms and animals return to wild behaviours, humans strengthen their connection with nature and begin to see nature as nature. In doing so, they embrace both the positive and negative emotions that stem from engaging with life and death in nature, what we call ambivalent relationality. This is where joint rewilding practices get tangled with ambivalent relationality, leading to *affective updating*. Affective updating reinforces the identification and sense of comfort with the natural world and the desire to work with nature. Through it, the enterprise can resolve the fundamental detachment that has created fault lines between the human and the non-human world (Muñoz and Branzei 2021). It allows the enterprise to revert trends and deal with tensions, identified by environmental psychology as a central driver of environmental degradation e.g. revert fears of non-predators and deal with the emotional pain from witnessing predatory behaviours in other species.

Experiential updating. We theorize that affective updating can trigger tensions as it prompts enterprises to embrace both positive and negative emotions. We propose that these tensions can be alleviated by collaborative practices formed at the level of daily tasks (task interdependence). This leads to experiential updating, which reinforces the physical familiarity and the desire to work with and further regenerate nature. Ultimately, positive nature experiences are predictive of nature-protective behaviour (Nisbet, Zelenski, and Murphy 2009, 717). This creates a loop where the formation of collaborative tasks changes the nature of collaborative work from instrumental exchange to meaningful collaboration. Meaningful collaboration can strengthen regenerative work. This derives mutual benefits, which in turn reinforces engagement between species during regenerative work.

Benefits and engagement. As a constructive form of ecological relationship between species, humans and animals are no longer fighting for the same space. On the contrary, each of them seems to benefit from working with the other, and the surrounding ecosystems are restored and protected because of the actions that derive mutual benefit. In doing so, *experiential updating* strengthens engagement, which naturally reinforces cognitive updating. As more interdependencies are developed at the level of practices, reciprocity between humans and animals is enabled, and both can benefit from the emerging mutuality. As meaningful collaboration in practice intensifies and derives benefits, cognitive updating (paradigmatic change) and the return to wild behaviours are reinforced. This, we argue, is how human-animal mutualism is formed and actively maintained by the organization in the pursuit of environmental regeneration.

Contributions

Through our findings and theorized model, we contribute to the literature in several ways. First, we contribute to the growing literature on regenerative entrepreneurship by revealing novel regenerative practices and micro-level interactions formed and fostered by a rural enterprise. Regeneration is a relatively new area of research in management research (Hahn and Tampe 2021; Muñoz and Branzei 2021). Being regenerative means having the capacity to bring into existence again or allow something to grow or be grown again. It is a primary attribute of all living systems and allows for restoring the capacity of a system to continuously self-reproduce, self-organize, and evolve, at the time it builds healthy human, organizational, and natural networks (Dias, 2018). Hahn and Tampe (2021) define regenerative businesses as those that enhance and thrive through, the health of social-ecological systems in a co-evolutionary process. They conceptually explore the principles of regenerative business and operationalize regeneration strategies. We add to their work

by explaining how regenerative practices in rural enterprises are enactment on the ground, in deep connection with nature. This invites an expansion of the scope of partnerships and collaborative work that can be formed in regeneration, opening a new theoretical space within entrepreneurship research. A space that is marked by practices, rather than intentionality: regenerative entrepreneuring.

In opening a space for regenerative entrepreneuring, we build a theoretical bridge between nature relatedness and entrepreneurship, showing how human-nature connections might work in a rural entrepreneurial setting and how context determines entrepreneurship (Gaddefors and Anderson 2017). Our explanation is grounded not only in rationalized interpretations but also in emotions and experiences, which get updated as regenerative practices get entangled. In doing so, we expand further the understanding of micro-level phenomena in entrepreneurship, showing the scope of cognitive and emotional connections humans can build with nature and the potential impacts thereof. Vlasov et al. (2021) show that establishing connections with nature is indeed a psychological need for humans, enabling an array of positive mental health outcomes (Martyn and Brymer 2016; Wang et al. 2020). Our work provides evidence of practices and forms of interaction whereby those needs can be met, and outcomes achieved. We explain how regenerative work can foster a synergistic relation between planetary and personal well-being, suggesting entrepreneurial practices that can reattach humans to nature at work, constantly reinforcing paradigmatic change, identification, sense of comfort, physical familiarity, and the desire to work with and further regenerate nature. At the level of environmental cognition, Norton et al. (2015) argue that research has mostly focused on identifying between-person variance neglecting individual behaviour that operates at the within-person level. Since both levels necessarily interact (e.g. within-level affect > between-level attitudes) to explain environmental behaviour, the full picture remains elusive. Our work adds to this literature by shedding light on within-person practices operating at the level of emotion and experience, and what lies behind loving and caring for nature (Perkins 2010), which could potentially enrich between-person explanations.

Boundary conditions

Our study followed the experiences of a regenerative farming enterprise. Panguilemu can be seen as an outlier in comparison to how traditional farming enterprises work and how sustainability is generally enacted by organizations interested in environmental stewardship. This extreme case offered us the opportunity to engage in novel theorizing, and yet future research must interrogate this question across a wider sample.

Another important boundary condition is the extrapolation of inferences to the organization as a whole or the broader category of regenerative enterprises. Particularly in terms of the distinctiveness of the approach and the positive impacts on ecosystems. In this research, we paid attention to micro-interactions between organizational practices and natural environments, which led us to uncover mutually beneficial relationships with animals. This seems meaningful to the organization and is seen as deriving mutual benefits and positive ecological outcomes.

This is interesting and problematic at the same time, as it gives the impression that there is nothing wrong with the enterprise, inviting a romanticized portrayal of the reality of sustainable enterprises. Our case is different in its approach, operation, and how it has built connections with nature , with positive impacts on ecosystems. The obvious questions are whether this is a fair representation of an eco-centric enterprise and whether the findings and inferences can be extended to other rural enterprises, perhaps less committed to building strong connections with nature.

We did observe the organization struggling financially, trying to consolidate debt, considering diversification, and seeking external investors. It also had to deal with employee turnover and untrained volunteers. This resonates with a broader reality of eco-enterprises and new ventures more broadly (Muñoz, Cacciotti, and Cohen 2018). As with similar enterprises,

struggles can constrain action but at the same time can reinforce the commitment and approach to environmental restoration. While boundary conditions might be tight and there might be other interpretations of the regenerative practices and interactions presented in this paper, we are confident that our findings and theorizing can be transferred to other contexts (e.g. community-based and social entrepreneurship) as businesses try to make sense of their connections to proximate natural ecosystems, in their attempts to embrace and construct healthier relationships with nature.

Opening new territory for rural entrepreneurship research

By looking at the actions of a regenerative farming enterprise, we uncover an array of practices and relationships enacted by the enterprise in collaboration with nature. This opens a fascinating new world for those interested in advancing research at the intersection of rural entrepreneurship and regeneration. Firstly, our research opens a door to rewilding, as an approach to environmental restoration available to rural enterprises. Rewilding is a conservation approach that emphasizes the (re)introduction of megafauna, such as large grazers or large carnivores, to restore ecosystem processes (Root-Bernstein, Gooden, and Boyes 2018). Such (re)introductions seek to restore top-down trophic interactions, return habits to a pre-human status and allow natural processes to regain dominance (Corlett 2016). With a growing number of enterprises committed to stronger forms of sustainability, we wonder what entrepreneurial rewilding might look like; enterprises re-engaging with a wilder natural world. Also, we believe there is a space in our entrepreneurship theories for novel approaches where entrepreneurs take a step back and seek business flourishing by letting nature do its work.

In our findings, we show that human-animal mutualism has positive benefits for the species involved and, as a result, for the restoration of the environment. Another research avenue our research opens pertains to protective behaviours and well-being (Dean et al. 2018; Dornhoff et al. 2019), which can be also relevant to rural entrepreneurship scholarship. Capaldi et al. (2014) found noticeable differences between those who strongly relate to and identify with the natural world, compared to those who do not. It improves psychological health and reduces cognitive anxiety (Martyn and Brymer 2016; Nisbet and Zelenski 2013). Zelenski and Nisbet (2014) argue that the higher the degree of relatedness with the environment and the time we spend in nature improves our sense of subjective well-being, and drives us to protect and preserve nature (Nisbet, Zelenski, and Murphy 2011; Tam 2013). In a world seeking to rethink work and organizational life, this research avenue offers a wide range of alternatives to move forward.

Thirdly, and more broadly, our research also opens a new space for research on human-animal work in entrepreneurship and environment research. Human-animal relationships are part of our daily lives, not just with our pets, emotional support animals, or farm animals. They have recently begun to play an interesting role in the workplace. Theories of management, however, have proven insufficient to understand this understudied domain (Hannah and Robertson 2017). Our findings provide insights into unique relationships and shed light on how they might form and evolve as collaborative work. As such, they open new territory for research, which is relevant to scholars interested in rural entrepreneurship and entrepreneurship in farming settings, as well as to those interested in settings where humans and animals already interact (e.g. zoos, breeding, horse racing, veterinary practice, and beekeeping). Hannah and Robertson (2017) argue that human-animal interaction is deeply entangled in several dimensions, 'belonging uniquely to the organizational and institutional realm of formal organizations'. Yet, research on human-animal interaction is still rare in management and entrepreneurship research, as is the presence of animals in general. This has been recognized over time by Cunha et al. (2019), Labatut et al. (2016), Skoglund and Redmalm (2017), Hannah and Robertson (2017), and others. Indeed, only recently, Oxford University Press published the first volume exploring a range of species interactions through the lens of business, management, and organization (Tallberg and Hamilton 2022). Given the relevance of natural ecosystems, it is more surprising its absence from rural

and eco-entrepreneurship research. More broadly, our findings and future theorizing can help repair the division between natural and social sciences, formed by traditions that have delineated boundaries between humans and nature (Bradshaw and Bekoff 2000).

We want to go one step further in our invitation to engage with human-animal work. Literature on human-animal work tends to focus on the anthropomorphizing of animals, where humans treat animals like other humans (Asquith 2010; Dotson and Hyatt 2008). This is interesting, and novel already. Our research, however, sheds light on human-animal relationships where both see each other as distinct species. In opening a new research territory from the perspective of human-animal mutualism, we invite management scholars to avoid studying this relationship within organizations from the perspective of the humans 'who constitute and are constituted by them' (Michel 2014). Non-human animals are living beings that also develop profound bonds with humans (Nagasawa, Mogi, and Kikusui 2009) and whose 'points of view' are relevant in making sense of the human world and human-animal relationships (Bensky, Gosling, and Sinn 2013).

Notes

1. In practice, regenerative agriculture is a way of farming that works with nature to help tackle climate change and ecological collapse. This is embraced by non-conventional approaches, such as holistic management, permaculture, biodynamic farming. They see nature as a complex whole, where all parts are interconnected and interdependent. Regenerative agriculture thus approaches farming as a partnership with natural systems – both giving to and taking from them.
2. Deep ecology is an environmental philosophy and social movement based in the belief that humans must radically change their relationship to nature from one that values nature solely for its usefulness to human beings to one that recognizes that nature has an inherent value.
3. https://goo.gl/maps/XkhzmGioG3ZQe1Bi7
4. https://www.surgeactivism.org/allansavory
5. Description of EOV and evidence can be found in Appendix A
6. Appendix B provides an overview of the data collected for this study
7. Link to video folder https://www.dropbox.com/sh/5ezgs94fazu23xa/AAAS2CjiO-C2MqCD_YyHsQeRa?dl=0
8. To give the reader a broad understanding of the context of data collection, in Appendix C we offer examples of notes recorded in a digital diary, describing experiences on a typical day of work at Panguilemu. The story is part of the notes taken by the second author; therefore, it is written in first-person. The story revolves around an electrical fault in the fences separating grazing spaces.
9. This refers to loan the business used to acquire part of the estate. The original terms of negotiation were unfavourable, as the estate was significantly undervalued and thus requiring a higher collateral.
10. While some agroecological practices, such as Holistic Management or Biodynamics, promote regeneration through livestock management, they do not provide guidance on how relationships between humans and animals should be formed and maintained.

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Appendix A. Ecological Outcome Verification

Description: Ecological Outcome Verification (EOV) is a protocol for monitoring land health, giving a holistic look at both leading and lagging indicators. EOV is a practical and scalable soil and landscape assessment methodology that tracks outcomes in biodiversity, soil health, and ecosystem function (water cycle, mineral cycle, energy flow and community dynamics). EOV has been built on Savory's Holistic Management (HM) comprehensive biological monitoring methodology. Each Organization (Hub) in the Savory Global Network is a contributing organization and their producer and scientific networks are constantly providing guidance and input. The criteria are comprised of leading indicators of ecological health that have predictive value about the direction of changes. These indicators/measures include living organisms; live canopy abundance; warm-season grasses; cool-season grasses; litter decomposition; soil capping; water erosion; contextually desirable species; and others. EOV is designed to engage farmers and ranchers around the world in continual learning and support towards their enduring success both as business leaders and as land stewards. The key difference between EOV and other certification programmes is that it is driven by producers, from the bottom up, with outcome-based benchmarks. Producers engage with their regional Savoury Hub, which deploys a Verifier to visit their property and begin the process of setting the farm's baseline and collecting trended data. The Verification is repeated and renewed annually, with Long-Term monitoring occurring every five years. If the EOV is received, the producer will be entered into the Land to Market verified regenerative supplier roster, which affiliated brands, retailers and end consumers will access for their sourcing needs. https://savory.global/land-to-market/eov/

Evidence: To obtain Ecological Outcome Verification (EOV) and participate in the Savory Institute's Land to Market programme's list of verified regenerative suppliers, Fundo Panguilemu schedules visits to map out and implement a farm monitoring plan that combines Short-Term Monitoring (STM) sites, and soil sampling sites distributed throughout the field (following a stratified random sampling scheme), with Long-Term Monitoring (LTM) sites. An accredited regional monitor visits the farm for the annual STM. During the last visit in 2020, indicators such as live canopy abundance; living organisms; vigour and reproduction of contextually desirable functional groups; warm season grasses; cool season grasses; litter abundance; litter decomposition; dung decomposition; soil capping; among others, presented increases from its baseline estimated in 2019. If the results are positive in the context of the eco-region, EOV verification is granted/renewed. Additional result reports and indicators can be requested directly from Savory Institute and Fundo Panguilemu.

Appendix B. Overview of data collection

Date	Data collection activity	Focus of data collection
2019 (July, week 3)	2 semi-structured interviews with founders.	History of Panguilemu, mission, holistic management, regeneration, wild behaviour.
	2 informal conversations with founders (during field visit and sheep herding).	Challenges to regeneration and holistic management in Patagonia. Relationships with nature. Ecological outcomes of holistic management.
	Day-long informal conversation with founders (repairing fences).	Regenerative practices, close interactions with nature.
2019 (October, week 4)	Semi-structured interview with Elizabeth (founder).	Panguilemu's vision, volunteering responsibilities, housework, and schedule.
	Semi-structured interview with Domingo (foreman).	Views on Panguilemu, nature relationship, job training and assignment of responsibilities.
	Informal conversation with Elizabeth and Domingo.	First impression of the farm, new responsibilities, receiving inputs, preparing work in the mountains.
2019 (November, week 1)	Informal conversation with Elizabeth.	Animals and their role in nature. Example: horses and grass. Technical concepts of ecology, agriculture and biodiversity. Relationships with animals, especially her dog Tato and horse Morena.
	Informal conversation with Elizabeth	Household responsibilities and childcare.
2019 (November, week 2)	Semi-structured interview with Jose (founder).	Holistic management, economic vision of Panguilemu and profitability in regenerative models. Importance of biodiversity for ecosystem regeneration and economic productivity ('healthy' biodiversity). Responsibilities towards the consumer and surrounding natural systems.
	Informal conversation with Nicolas (veterinarian).	Health control, sheep dog and farm management Issues with cougars attacking the sheepdog.
2019 (November, week 3)	Open conversation with Elizabeth and Jose (over dinner).	New volunteers and tourism management.

(*Continued*)

Date	Data collection activity	Focus of data collection
	Observation Holistic Management workshop, Jose and Argentine farmers.	José Manuel held a workshop on holistic management with several Argentine farmers. They were concerned about the scarcity of grass regeneration for their animals, which implied greater dependence on external inputs and therefore higher production costs. The workshop lasted 6 hours, in which Jose showed in practice how the farm remained 'healthy' thanks to regeneration and biodiversity.
	Semi-structured interview with Elizabeth.	Reflections on experiences in the farm, feelings, environment relationship, working with sheep and cows, and relationships with horses and dogs.
	Informal conversation with Domingo (foreman).	How moving sheep to new farms allow soil regeneration.
2019 (November, week 4)	Semi-structured interview with Juliane (volunteer)	Juliane is a veterinary student from Germany. Motivation of volunteering, expectations, nature relationship.
	Semi-structured interview with Talara (tourism manager)	Economic expectations, connection between her studies and nature.
	Semi-structured interview with Jose.	Future of holistic management, local economies development, animal welfare, future investments in Panguilemu, business model and financial support. Requirements for maintaining animal welfare and building future resilience.
2019 (December, week 1)	Open conversation with Elizabeth and Jose (over dinner).	Volunteering experience and feedback, next steps.
2020 (Jan-Jul)	Frequent causal conversations with Jose and Elizabeth (WhatsApp)	Covid situation, animal health, emergences in economic activities of Panguilemu.
2020 (Jul-Dec)	Frequent causal conversations with Jose and Elizabeth (WhatsApp)	Changes in covid situation, new investors for Panguilemu, planning the sheep shearing with less help.
2021 (throughout)	Frequent causal conversations with Jose and Elizabeth (WhatsApp)	Health, welfare, new animals and plans to reopen tourism.
2022 (January, week 4)	Semi-structured interview with Elizabeth Barkla (founder).	New plans of Panguilemu, conversations with more emphasis on animals (chickens and sheep), anniversary celebration. How animal welfare remains at the centre of the organization as the main tool for regeneration. The protective role of dogs, horses, and cattle.
	Semi-structured interview with Jose Manuel (founder).	New businesses, investor visit, training new volunteers on animal care, especially shearing sheep and natural horse hooves. New tourism activities, especially trekking, horseback riding and expedition. Modification of practices, e.g. shearing sheep and keeping the horse's natural hoof. The reopening of Panguilemu post-covid.
	3 informal conversations with Ian (new foreman).	Planning of farm responsibilities, moving chicken coops (like Holistic Management), building new sheep fences.
2022 (February, week 1)	Semi-structured interview with Alejandro (tourism manager).	Motivation to work in Panguilemu, connect with horses and dogs, develop new tourist activities with low environmental impact. Attitude towards animals, especially horses, central motivation to apply to Panguilemu. Replication of Panguilemu's model in Cochrane (southern city in Chile).
	Semi-structured interview with Nicolas (veterinarian and friend).	Treating injured animals, taking management of the farm in summer, animal liability and exposing cases in university classes.
2022 (February, week 2)	Semi-structured interview with Claudia (reporter and friend).	Planning TV show visit to Panguilemu, motivations, ontological coaching training with Jose, potential economic activities on the farm.
	Semi-structured interview with Camila (volunteer).	Deep connection with animals in Panguilemu, recognition of species receiving less attention (for example cats), sense of environmental responsibility.
	Semi-structured interview with Pamela (volunteer).	Planning of medicinal herbalist event in Panguilemu, coordinate tourist activities, exhibitors with strong connection to nature. She works in natural medicine and has found diverse and unknown species of plants in Panguilemu. Relationships with herding dogs and 'Poncho', a wild dog.

Appendix C. Examples of notes recorded in digital diary

I started the day cleaning the entrance to the bathrooms. They are separate from my room. I had the pleasure of meeting Domingo, the farm's foreman for the past 4 years. He offered me a welcome 'Mate' (Patagonian drink) and I accepted without hesitation. Elizabeth gave us a list of tasks for the day, but our priority was to find a solution for the electric fence and then move part of the herd to a different section because some areas of the grassland had to rest. As we were on our way, I had the opportunity to talk with Domingo about his work at the farm and his life in farming more broadly. He has worked in farming all his life. Regarding Panguilemu, he tells me that the work here is not like it used to be. In the beginning, he worked with 3 more people and about seven volunteers who rotated constantly. Currently, it is too much work for Elizabeth and José, so he is now helping them here.

The estate is huge and having to move the herd around comes with a cost, physical mainly. Domingo usually resents his right knee. I wonder why Domingo is still working here. So, I asked him. Instead of answering, he asked back 'can you see that mountain at the end? [. . .] There is a group of sheep hidden, waiting, and you will see them move'. I couldn't identify a single sheep. After a few minutes, a group of sheep began to move, just as Domingo predicted. I looked at him, in surprise, and asked him how he knew. He looked at me very kindly and laughed. He mentioned that the farm, knowing that the sheep are there, gives him peace, and tranquillity, that it is one of his favourite places, and that he could not work anywhere else. This is why he stays.

The conversation continued, about what the farm meant for him, and most interestingly what nature means. He says that nature is something that we cannot control, and that it will always be upon us. He nicely puts it 'We will leave this world, and nature will continue generation after generation [. . .] our job here is to try and help where we can, and above all adapt to it' [referring to nature]. I had the privilege of seeing how Domingo was able to change horses and sheep without lashing or any form of violence, only by hissing and with the help of his shepherd dogs 'Gaucho' and 'Corral'. I was able to record it, and I look forward to reviewing those videos in more detail. Domingo taught me how to test the voltage in the electric fences because he had to keep moving animals. I started walking around the field trying to find the fault in the fences. I was tired, and I wondered on more than one occasion if it was 'so important' that a specific fence did not have the necessary electric current. These fences divide the different areas of the farm. They have three strands of electric current, and the machine that tests the voltage level only returns the error and the possible direction of it. This means that the error can be one or 10 kilometres away, but we will never know specifically where the problem actually is. To find the error we have to go testing 'fence by fence', at least in theory. After a long journey, we managed to find the 'possible' problem. Luckily for me, these were right on the field called 'El Mirador'. I still do not know many of the names of the different areas, there is the 'El Payaso', also 'Los Faisanes', 'Las Chivas', 'El Mirador', and many others. I took some photos, as I was waiting for Domingo to return. When he arrived, we realized that there were 'multiple' problems with the fences. We tried to repair each one of them, and apparently, we had a bit of luck because the machine that tests the current level stopped marking 'error'. We walked a long way back home. Once at Elizabeth's house, she asked us if we managed to solve the problem. At that moment, frustrated, I asked why the fences were so important. Elizabeth looked at me very seriously, and she replied: 'Fences are vital for regeneration. If we look after them, we stop animals from crossing to other sectors and other farms. When they cross, they feed before the grass is ready, interrupting the regeneration process of that particular sector. If that field is not 100% regenerated, the damage caused further contributes to climate change. This is why I am so strict with fences'. At that time, I think I understood a little more about Panguilemu's work.

We shared a beer with Domingo. He told me more stories about him. He did not have access to formal education. However, he knows the land, which cannot be taught in a classroom. He considers Elizabeth to be his friend. I shared some thoughts with him about our research, very general, he said 'I am glad that there are still people like you, the young people of today do not care about our resources, about our water and our fields, they only care about technology and making money'. We continued talking for a few minutes and I went to my room. I went to rest thinking about the fences, what they mean for Elizabeth, and the importance of the farm. I now wonder what our fences are.