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ARTICLE

The conceptual potential of 'more-than-human care': A reflection with an artisanal fishing village in Brazil

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Abstract

As dominant approaches to biodiversity loss and climate change continue to fail in mitigating current socio-environmental crises, scholars and activists are exploring novel conceptual frameworks to drive transformative change in conservation. Among these, more-than-human care has emerged as a concept at the intersection of feminist debates about care and post-humanist discussions around the more-than-human. Although more-than-human care is increasingly referenced in the literature, it remains sparsely situated in the Global South. This article investigates the concept's potential to articulate care relations that can foster more plural, respectful, and transformative biodiversity conservation practices in local communities. Our research is situated in an artisanal fishing village in Brazil, where we engaged with both human and non-human members of the community to engage with their perspectives on more-than-human care and its relevance to their local concerns. From our analysis, four key dimensions emerged: the vital and everyday nature of caring; the relationality between humans and non-humans; reciprocity; and the fostering of flourishing for as many as possible. Our core argument is that the interaction between community practices and care theory enables new perspectives that center on daily and reciprocal care relations often overlooked in mainstream conservation approaches. By situating the conceptual potential of more-than-human care within the Global South, we underscore its ability to make the invisible visible and to inspire action for transformative change.

KEYWORDS

Brazil, care, fishing village, more-than-human care, participatory action research, reciprocity, transformative change

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1 | INTRODUCTION

The biodiversity crisis is causing alarm around the world, resulting in the creation of conventions, panels, and a lively interdisciplinary debate between critical geography, political ecology, multispecies studies, biology, and environmental humanities, among other fields (e.g. Braverman, 2014; Butt et al., 2018; Menon & Karthik, 2017; Root-Bernstein, 2016; Thomsen & Thomsen, 2021). While biodiversity has become a global research and policy concern (IPBES, 2022), there is also increasing recognition that current conservation regimes are failing to curb biodiversity loss and create sustainable futures (Global Witness, 2015; Petchkaew, 2023; Reddy, 2023).

Given the failures of fenced and fortress conservation approaches (Rai et al., 2021; Rodary, 2008), many alternative proposals have emerged that challenge the strict separation of humans and non-humans in terms of conviviality (Büscher & Fletcher, 2019), commons (Agrawal & Chhatre, 2006; Persha et al., 2010), and socio-biodiversity (Menezes, 2021), among others. These approaches emphasise that humans and non-humans,[1] as well as natural and social factors, cannot be fully separated (Adams et al., 2004) and that centering on the coexistence of humans and non-humans is essential for creating respectful, plural, and transformative conservation. This paper investigates the concept of more-than-human care,[2] which refers to care relations between humans and non-humans. Our core argument is that the interplay between community practices and care theory produces new theoretical and empirical insights for redefining relationships in biodiversity conservation.

To engage with this concept, we put feminist and post-humanist care theories in conversation with daily community practices. While the term more-than-human care is used in various academic contexts (Barnett, 2023; Barnett et al., 2021, 2024; Cañada et al., 2022; Chen & Pschetz, 2024; Chua, 2021; Just, 2022; Margulies, 2022; Perdibon & McSherry, 2023; Puig de la Bellacasa, 2017; Ressiore, 2022; Silberzahn, 2024; Slater, 2021; Søndergaard, 2023; Yates, 2021), definitions and examples of its conceptual potential in Global South settings remain sparse (Raghuram, 2016). This scarcity limits our collective ability to envision care that extends beyond humans (Silberzahn, 2024).

Authors such as Puig de la Bellacasa (2017), Krzywoszynska (2019, 2015), Silberzahn (2024), Pitt (2018), Dunkley (2023), Adams (2020), Barnett (2023), Weitzman et al. (2024) and Maizza and Oliveira (2022), among many others, are concerned with more-than-human care, some using and others not using the term. Puig de la Bellacasa has been influential in de-centering the human from care activities, sharing the understanding that 'care is everything we do to maintain, continue, and repair our world' (Fisher & Tronto, 1990, p. 40) and it must explicitly involve humans and non-humans (Puig de la Bellacasa, 2017; Silberzahn, 2024).

Concerns about care, respect, and plurality in conservation policies and actions require that processes, projects, and decision-making become more plural (De La Rosa et al., 2024; IPBES, 2022; Massarella et al., 2022). This means involving stakeholders in transdisciplinary processes, especially knowledge and practices of Indigenous and local communities, as they are crucial to maintaining biodiversity worldwide (Thaman et al., 2013) and hold 'in-depth and time-depth knowledge about biodiversity and ecosystems' (UNEP, 2012). However, in biodiversity conservation, a lack of attention to daily, relational, and reciprocal care can invisibilise relations and practices fundamental to a conservation process that is more plural while not 'flat' in denying ontological differences.

Our study is situated in Siribinha (Conde, in Bahia, Brazil), a fishing village with mangroves, river, sea, rich artisanal fishing practices, and knowledge (Figure 1). Siribinha is the site of collaboration between the authors and community members. This research was part of a broader research project focused on the community's social, educational, and environmental challenges, including conservation efforts and the preservation of local ecosystems and fishing practices. Over eight years, researchers have built care, friendship, and trust relations with community members (Bollettin et al., 2023; De La Rosa et al., 2024; Rocha et al., 2020).

With daily interactions between humans and non-humans, influenced by local culture and practices, Siribinha is a relevant location for reflections and practices of more-than-human care. The community is simultaneously a place of abundance and lack of care. While the intertwined histories of the socio-biodiversity context create a rich web of care relations, this fishing village's economic and social marginalisation also exposes a lack of institutional and structural care. Basic care from the State is often absent, while violent forms of development (Escobar, 1994; Porto-Gonçalves, 2019; Ziai, 2020) linked to environmentally impactful tourism and gentrification processes threaten lives and hinder care practices.

To interplay the field experiences in Siribinha with insights from feminist and post-humanist care debates, we surveyed the literature on more-than-human care. From examining the literature, we question this concept's meaning and investigate its potential by situating it in the local relationships between humans and non-humans. What emerges from more-than-human care within the local community? What are the potentials of the more-than-human care concept for biodiversity conservation practices?

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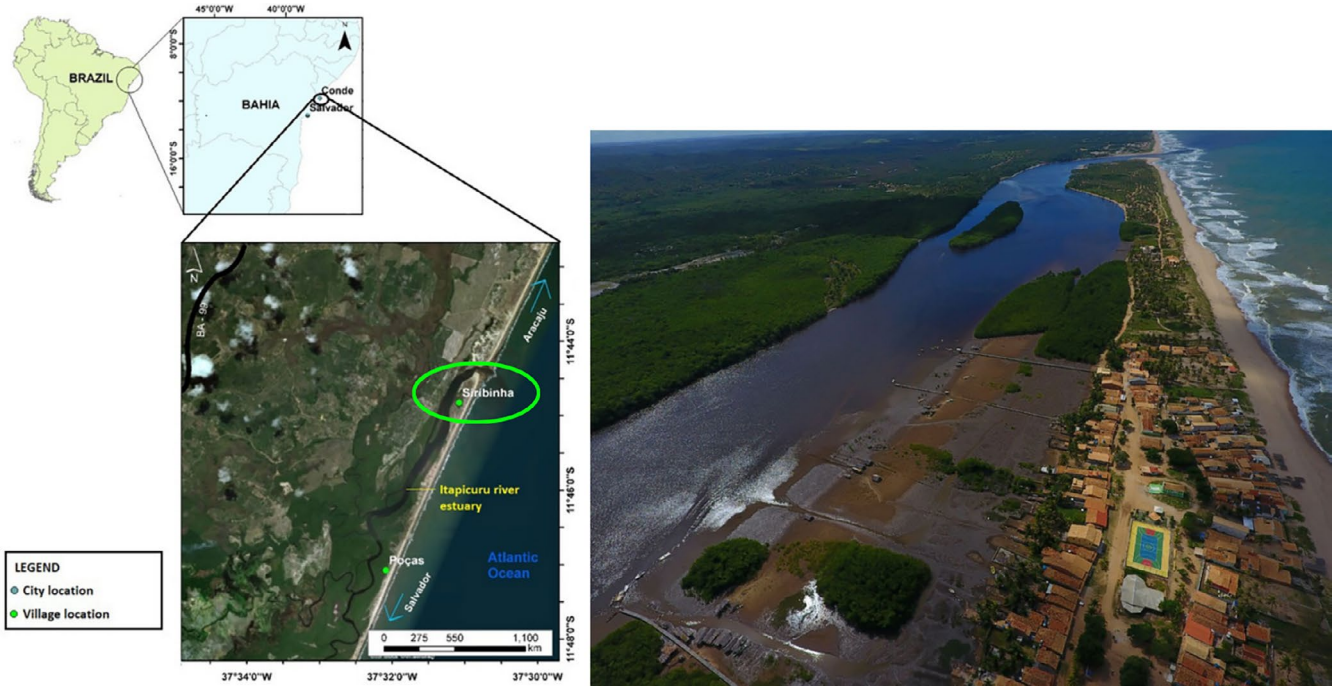

FIGURE 1 Left: Siribinha's location in the municipality of Conde, Bahia, northeastern Brazil. Figure from Renck et al. (2022, modified from Guimarães et al., 2020). Right: A view from the community of Siribinha from above shows its location between the Itapicuru River estuary and the Atlantic Ocean. Photo: José Amorim Reis Filho, reproduced under permission (CC-BY-NC).

We first discuss the necessary theoretical framework and literature regarding more-than-human care to carry out this study. Then, we present the feminist and participatory methods used in the field for data collection and analysis. This is followed by a detailed introduction to Siribinha's context. Next, our analysis involves an interplay of empirical and theoretical reflections on the four dimensions of more-than-human care that emerged: daily, relational, reciprocal, and flourishing. In our discussion, we reflect on the wideness and plurality of care meanings and practices while we specify it with theoretical, empirical, and biodiversity conservation insights. We conclude by synthesising the more-than-human care concept, referring to its interdisciplinary contributions, and inviting future research.

2 | MORE-THAN-HUMAN CARE

To understand the concept of more-than-human care, we must refer to care and more-than-human debates. Theoretical debates about care have become increasingly prominent in academic settings (Lindén & Lydahl, 2021; Mol et al., 2015; Moriggi, 2021). These debates are multiple, involving health care (Mol et al., 2011), unpaid domestic labour (Weeks, 2011), politics (Chatzidakis et al., 2020; Cox, 2010; IDAS, 2023; Tronto, 2013), ethics (Barnes, 2012; Conradi, 2015; Gilligan, 2011; Kuhnen, 2014), among others. Feminist scholars highlight that despite this attention, care relations remain at the margins of many academic and public debates, often still taken to be of secondary importance or a private matter (Mol & Hardon, 2020, p. 186; Lindén & Lydahl, 2021). Although care is a work that sustains life and drives the economy, it is often invisibilised in our society (Laugier, 2021). While feminists have shown that care is essential to maintaining life, they have also discussed the economic, political, and social burdens associated with daily care often disproportionately fall on marginalised groups such as women, people of colour, and immigrants (Akotirene, 2019; Barnes, 2012; Case, 2000; Laugier, 2021).

Care necessities diverge strongly depending on intersectional conditions (Crenshaw, 2017), such as context, identities, social positions, agendas, and struggles (Esteves & Maia, 2021). Still, they are an existential condition for everyone at some point in life (Cox, 2010). While care remains relevant as a human conceptualisation of certain practices, it has become crucial to discuss together its human and non-human elements as parts of a shared ecology (Cañada et al., 2022). Accordingly, Puig de la Bellacasa (2017), Moriggi, Soini, Bock, and Roep (2020); Moriggi, Soini, Franklin, and Roep (2020), Maizza and Oliveira (2022), Adams (2020), Silberzahn (2024), Krzywoszynska (2019), Dunkley (2023) and others argue that we need to think of care beyond human-human relations, recognising non-humans as powerful

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agents and essential parts of the life-sustaining web that allows humans to exist in the first place. In other words, care cannot be conceived without the non-humans.

Care as a web of interdependence connects to the different meanings of more-than-human. It is not just to 'question or critique the hegemony of humans over non-humans, [it is to] undermine the very possibility of thinking about humanity as autonomous and self-determined' (Jaque et al., 2021, p. 6). However, the concept 'more-than-human' is also used very loosely in different ways, for example, to refer to a synonym of nature (Just, 2022), to geological, atmospheric, hydrological, and biological kin (Yates, 2021), as a synonym for other-than-human or non-humans (Bonner & Abdelmalik, 2008; Wright, 2015); among other uses (Reis-Castro, 2021). In this article, we understand it as a concept that goes beyond a 'human-only' sphere (Tsing et al., 2021), changing the usual focus from human-centric to beyond human, thus to a more-than-human-centric perspective. In the more-than-human world, 'bodies, objects, arrangements are always in-the-making' and humans 'are always in composition with' the non-humans, breaking down barriers and going beyond one or the other (Whatmore, 2006, p. 603). Hence, making both interdependence[3] and collectivity important aspects of more-than-human relations.

To think with a more-than-human lens is to actively blur the lines of what for centuries has been separated by dichotomies between 'humans' and 'non-humans' (Elton, 2022; Descola, 2013). As Whatmore (2002) argues, humans and non-humans are co-constituted, or they become together, as Isaacs (2020) states. As stressed above, more-than-human relations form a web, a network of life that demands a mode of inquiry that goes beyond discourse (Haraway, 1988; Whatmore, 2006). In this sense, the concept allows many senses to come together so that humans can connect with their insides and outsides (Abram, 2012; Ressiore, 2022).

According to Krzywoszynska (2019), more-than-human approaches are about forging relations that can make the world more accommodating, friendly, convivial, and flourishing (see also Barker, 2008; Bingham, 2006; Haraway, 2008; Hinchliffe & Whatmore, 2006). Ergo, our research emphasises that thinking, researching, and reflecting about others is not what we do. What we do is with the 'others' —whether human or non-human (Haraway, 2016; Turnhout et al., 2013).

Through an integrative literature review[4] (Snyder, 2019) focused on the term 'more-than-human care,' we learned about the multiplicity and diversity of studies around it. For example, research on green care (e.g. Garcia-Llorente et al., 2018; Hassink & Van Dijk, 2006; Moriggi, 2021; Steigen et al., 2016) and environmental care (e.g. Johns-Putra, 2013; Salazar-Ordóñez & Sayadi, 2011; Simanjuntak et al., 2023) is plentiful. Further, there has been recent discussion on politicising more-than-human care as a step for socio-ecological regeneration (Silberzahn, 2024). Some argue for the importance of attentiveness within more-than-human care, which can result in reflexivity, such as thinking about care as a systemic project rather than an individual responsibility (Krzywoszynska, 2019).

Our integrative literature review identified still sparse cases in Brazil grounded in care reflection within local, Indigenous, and traditional practices. From the ones found, Maizza and Oliveira (2022), Losito (2022), Weitzman et al. (2024), Bispo dos Santos (2023), and Krenak (2020) were the main inspirations for our analysis and discussion. In such work, care connects to movement: a dynamic and disruptive practice (Maizza & Oliveira, 2022; Weitzman et al., 2024). It also connects to cure, respect, and connection with non-humans and enchanted beings (Weitzman et al., 2024). The literature also refers to asking permission and engaging with enchanted beings (ibid.). Indigenous and local practices have shown how living well with non-humans is possible, inspiring many flourishing possibilities for many (Krenak, 2020; Losito, 2022). The literature also highlights that care is intuitive (Krzywoszynska, 2019) and not linear (Bispo dos Santos, 2023). Care is messy and full of constant iterations (Moriggi, Soini, Bock, & Roep, 2020).

Thinking with more-than-human care can make visible a web of interconnectedness where humans are part of an interdependent world – this web that can be powered and informed by reciprocity between humans and non-humans (Kimmerer, 2014). Surveying care literature is challenging due to its breadth and diversity, we learned that countless aspects of care practices, definitions of care, and elements of caring relations exist. In this section, we highlight, in italics, the aspects that influenced our analysis. These are burdens, daily, agency, collectivity, dependence, convivial, attentiveness, responsibility, respect, connection, asking permission, flourishing, interconnectedness, reciprocity, and maintenance. Although this is not an exhaustive list, we discuss these theoretical aspects with empirical reflections from shared experiences in the local context to understand their potential for respectful, plural, and transformative conservation efforts.

3 | METHODS, DATA COLLECTION AND ANALYSIS

The research methodology for data collection and analysis draws on principles of Participatory Action Research (PAR) (Gorelick, 1991; Kindon et al., 2007; MacDonald, 2012) and feminist methodologies (Harcourt et al., 2022; Harding, 1993). Following these principles, four main methods were performed: semi-structured interviews (Roulston & Choi, 2018),

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autoethnography (Ellis et al., 2011), focus groups (Chiu, 2003) (Figure 2), and participant observation (Flick, 2009) (Figure 3). These approaches emphasise embodied research and consider that the 'researcher is transformed in the process of research—influenced and taught by her respondent participants as she influences them' (Gorelick, 1991, p. 469). The variety of methods allowed for adaptation, improvisation, and flexibility, which are essential characteristics of research aiming to be inclusive, participatory, and careful.

Using the methods mentioned above, the field research was embedded in a long-term collaboration between the authors and the community. Fieldwork conducted by the first author over three consecutive months in 2022 and three weeks in 2023 focused on building trust, friendships, and mutual understanding with the community (Caxaj, 2015; Milberg, 2021; San Pedro & Kinloch, 2017). Sharing the daily life of the fishing community was essential for building relationships, understanding the context, and adjusting the interview questions to the community members' reality (DeVault & Gross, 2007). This included finding the correct vocabulary and reflecting on ways of talking about more-than-human care that would make sense to participants. To talk about such a complex concept, the first author's first weeks were essential to identify the best words to represent or better translate more-than-human care into Portuguese. The main words used were *cuidado* or *cuidar*, which translates into care. However, the study was conducted in a generative and dialogical format that aimed at understanding first what the participants thought those words meant and then thinking of care between humans and non-humans (*cuidado entre humanos e natureza*,[5] in Portuguese). The following questions, in Portuguese, were essential to discuss more-than-human care: Does nature care? Does nature care for you? Do you care for nature? Do you feel connected to Siribinha? Why? How do you relate to specific non-human beings[6]? All questions are available in Annex 1. Being Brazilian and a native Portuguese speaker facilitated the capacity to navigate the nuances of the language and its meanings.

The first author engaged a diverse group of people regarding age, gender, and roles for the semi-structured interviews (Table 1). Initially, researchers familiar with the village introduced her to many participants, and, later, community members advised her on others they considered relevant or interested in the topic. Before each interview, she would get to know most of them through informal conversations. Reflecting on feminist insights into how PAR can be unsettling and challenge participants' comfort, the interview approach was mindful of the interpersonal complexity of answering what many considered unusual questions—they involved tuning into the creativity, intuition, and emotions of the participants (DeVault & Gross, 2007; Harcourt et al., 2022; Roulston & Choi, 2018). In total, 35 interviews were performed.

To capture the diverse influences on human and non-human relationships in Siribinha, the first author interviewed community members, researchers, and local policymakers,[7] all possessing crucial influence on the relations and practices of more-than-human care, which included humans and non-humans (van den Berg & Rezvani, 2022).

During the transcription of semi-structured interviews, essential quotes were translated from Portuguese into English (original quotes, Annex 2). The analysis uses quotations to provide a broad account of the participants' experiences, insights, and knowledge. When quoting, we place the pseudonyms and the acronym of the 'group' the participant belonged to between brackets (Table 1). Given Siribinha's small size, minimal details about the participants are disclosed to prevent identification and respect their privacy. We highlight that the use of quotations does not aim to give a full spectrum of a unified view of all research participants.

Throughout the more-than-human care integrative literature review (Snyder, 2019), preparation for fieldwork, fieldwork, and data analysis, cycles of action and reflection occurred (Cahill, 2007, p. 182)—inspired and informed by PAR

FIGURE 2 Focus group with researchers and community members, February 2022. Photo: Mariana Batista (reproduced under permission—CC-BY-NC – Permission to share image granted by workshop participants).

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FIGURE 3 Navigating through the mangroves. Community members invited researchers to gather fruits from *restinga*. (Shrubby thicket-like forests growing on sand dunes) March 2022. Photo: First author's own.

TABLE 1 Information on semi-structured interviews with research participants.

Group	Group acronym	Number of interviews
Community members (varied group)[a]	CM	24
Policymakers[b]	PM	3
Researchers	R	7
Tourist	T	1

[a]Note that defining people under the umbrella of community members (CM) is quite difficult as it involves a good variety of identities, interests, professions, and stories. Under the umbrella of CM, we have considered: the younger generation (5 people); seasonal inhabitants, people who have houses in the community but are not from there (3); CMs who are also involved in policy-making (2); elderly who used to be fisherman or fisherwomen (3); currently fishermen (5); currently fisherwomen (3); community teacher (1); other varied activities (5). With few exceptions, most of them are involved in tourism-related activities such as owning a little hotel, having a bar/restaurant, and doing boat rides for tourists, housekeeping for *veranistas* (seasonal tourists that own houses in Siribinha), etc.

[b]The first author interviewed 5 policymakers, who are employed by the Secretary of Environment and Economic Development of Conde municipality. However, two of them are also part of the community and were, thus, counted as CMs in the Table. In the text they are referred as CM/PM.

(Gorelick, 1991; Kindon et al., 2007; MacDonald, 2012). During these cycles, inductive and deductive processes focused on prominent theoretical concepts and lived experiences of more-than-human care in the community. While performing the analysis, the authors concentrated on what was prominent in the lived experience, questioning what more-than-human care meant and how it structured relations in the community. A wide range of patterns emerged from the analysis, including non-humans as agents and capable of caring, the everyday character of care, reciprocity between humans and non-humans, fears about the present and future, care as a burden, care as cleaning and not polluting, and prefigurative thoughts for Siribinha. Considering these topics, the first author returned to the theory (feminists and post-humanist care theories and the indigenous, local, and traditional care knowledge and practices literature), then back to the data, finding common, diverging, and complementing lines. An outcome of this critical and dynamic analysis was the identification of four main more-than-human care dimensions (Section 5).

The process of action and reflection (Kindon et al., 2007) also involved gathering participant feedback to refine the interview protocol and focus group dynamics. In the subsequent fieldwork in 2023, the first author returned with the selected—included in this article—and discussed them with community members (CMs). This activity was called Caring with Siribinha focus group (Annex 3). The initial plan was motivated by the responsibility and desire to bring back some research participant insights and share parts of what the first author learned with them. However, reflections and questions from CMs on the quotes and the dimensions developed through the analysis contributed significantly to the analysis and conclusion of this article (Cahill, 2007).

4 | SIRIBINHA

Anna Tsing argues that it 'takes concrete stories to make any concept come to life' (Tsing, 2015, p. 66). With that in mind, we introduce Siribinha, an artisanal fishing village home to around 500 inhabitants (Renck et al., 2022; Tng et al., 2021)

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who mostly share four main surnames. Community members know each other well; many grew up and fish together. The houses are usually colourful and close to each other, mainly on the same main street that crosses the whole village (Figure 3). The landscape of the fishing village is characterised by many small fishing boats (Figure 4), fishing nets, *aratu*[8] peels, *massunim*[9] shells, a football field, a little blue church, some bars and restaurants, some little shops, two piers, among other features (Figure 5).

Siribinha is a village situated in the municipality of Conde whose economy primarily relies on coconut plantations, cattle raising, and, particularly in coastal communities: fishing, and tourism (Demasi, 2023; Renck et al., 2022; Tng et al., 2021). While the municipality grapples with native vegetation suppression, the Itapicuru estuarine environment maintains good conservation. Conde is in Bahia, part of Brazil's Northeast region, which has the highest concentration of poverty and inequalities in educational opportunities (IBGE, 2022a, 2022b). Disenfranchisement and marginalisation are key factors to understanding many traditional communities in the Northeast region, where access to public services is often less available than in the other areas of the country, such as the South and the Southeast. However, where there is struggle, there is also resistance. This area holds a history of resistance to colonisation, slavery, and land exploitation by European and Brazilian elites (Ferretti, 2019).

Siribinha is abundant in beauty, life diversity, histories and tales, faith, touristic areas, and extensive mangroves that hold their mysteries and serve as a nursery for marine life, *restinga* fruits, among other features. Siribinha is also abundant in knowledge. Previous research documented knowledge on artisanal fishing practices (Renck et al., 2022), fishers' explanation about ecological patterns and dynamics (El-Hani et al., 2022), local plants and their uses (Tng et al., 2021), educational practices (Fonseca, 2021; Silva, 2022), etc.

Since 2016, the inter-transdisciplinary research project led by investigators from Universidade Federal da Bahia and the National Institute of Science and Technology in Interdisciplinary and Transdisciplinary Studies in Ecology and Evolution built trust and personal bonds with the fishing community (De La Rosa, 2020; De La Rosa et al., 2024; El-Hani et al., 2022; Milberg, 2021). The researchers' ongoing presence in the community (i) enabled the first author to build friendships and establish trust in a relatively brief period and (ii) positioned the researchers as advantaged actors in understanding more-than-human care relations in Siribinha.

In 2018, the municipality established a top-down conservation policy, creating the Siribinha Peninsula Natural Monument in the Itapicuru estuary as part of a planned mosaic of protected areas. However, most community members were unaware of this process (De La Rosa et al., 2024). While the policy could benefit local communities by conserving vital ecosystems, their exclusion from decision-making diminished their agency in managing their territories. The research team mentioned above has been advocating for a bottom-up conservation process co-created with the CMs to encourage them to participate in conservation decisions. The team's efforts face significant challenges due to the local government's limited commitment to incorporating local knowledge and interests, favouring top-down approaches (Bollettin et al., 2023; De La Rosa et al., 2024).

'Siribinha can be understood as a village at the crossroads where effort and conflict over conservation and development meet' (Milberg et al., 2024, p. 4). The community faces challenges such as silting of rivers, lack of waste management,

FIGURE 4 Siribinha's main street. Behind the tree, the colourful houses. March 2022. Photo: Beatriz Demasi A. (reproduced under permission – CC-BY-NC).

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FIGURE 5 Boats used for fishing in the river. March 2022. Photo: First author's own.

pressure from semi-industrial fishing, decrease in fish and shellfish populations, and limited access to public health and schooling, alongside the large-scale oil spill that affected the Brazilian shore in 2019 and 2020 (Fonseca, 2021; Lourenço et al., 2020). These issues highlight the social and environmental injustices affecting the community and its wider context (Sections 5 and 6). In the region, predatory and poorly managed tourism is growing. The 'advance of real estate construction attracts people from large urban centers, displacing local dwellers and increasing the price of houses and land (gentrification)' (Demasi, 2023, p. 10). Communities on the north coast of Bahia, including in Siribinha, are at risk of displacement and cultural erosion due to tourism-driven development. The stakes are high, as tourism 'put[s] coastal strips in danger, displaying cruel and explicit segregation. Gentrification in these territories transcends physical and spatial issues. Supported by the public authorities, foreign capital becomes the main protagonist of these changes' (Mello et al., 2016, p. 4). Almost every coastal area of Bahia is at risk of gentrification and real estate speculation. While some people and communities try to resist, many see no other choice but to change their lifestyles, which endangers traditional fishing cultures and the good conservation status of the environments they depend on. In Siribinha, such processes have been happening slowly, but their dangers knock at the doors of the community and become increasingly present in the daily lives of the fishers.

5 | MORE-THAN-HUMAN CARE DIMENSIONS REFLECTED *WITH* SIRIBINHA

The interplay of theory and practice through qualitative and participatory methods allowed for in-depth dialogues about care relations, from which four dimensions emerged that were discussed with the care literature. These dimensions do not aim to be universal but reflexive of the context of Siribinha while also providing learning opportunities for other locations. Our analysis follows the premise that concepts are tools because 'they should not impose themselves on the analyst but serve the analysis' (Mol & Hardon, 2020, p. 199). From this premise, we identify the aspects that emerge from what is known in the literature based on the interpretation of the data.

5.1 | The vital and everyday-activity character of caring

Community members in Siribinha emphasised the vital and daily character of care. For example, Santiago and Margarida said:

> We care every day, right? Care is daily; if we want to be here in the future, we must care.
>
> (Santiago, CM)

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> Care is in the small gestures of daily life.
>
> (Margarida, R)

This daily care was often connected to how they frequently discussed conservation, avoiding pollution, and trash cleanup when asked about caring for and with non-humans.

> I don't throw [trash in nature]; sometimes I pick up from others, put it in the right place.
>
> (Santiago, CM)

> [to care] primarily is not throwing trash in the street. And, for example, when the garbage collection comes, I put my trash out right away. However, if I go and put my trash away tomorrow but the collection comes only on Wednesday, the animals will come, destroy and spread everything, and then everything will be messy and dirty there. If you let that happen, you are polluting.
>
> (Clarice, CM)

This reflects their awareness of how the waste impacts themselves, their neighbours, other living beings, and their livelihoods. The routine of putting out the trash on the correct collection day illustrates this daily care practice, linked to responsibility, maintenance, repair, and attentiveness to others' needs, which refers to what Mia said:

> ...if we care for it, we cultivate it, right? And if we cultivate, we'll always have it. So, if we take care of everything, we'll always have something. It will always remain/maintain, but if we're not careful, we'll never have anything, right? Nothing will ever remain.
>
> (Mia, CM/PM)

Based on this argument, we can reflect on how care ensures the community's continuity, reinforcing the idea of care as maintenance that requires responsibility and daily action.

CMs frequently raised concerns about trash, emphasising the importance of raising awareness among themselves and tourists. Through participant observation and workshops, an example of daily and collective care emerged: CMs suggested organising cleanup days and creating collective signs (Box 1). They acknowledged that while these activities are crucial for fostering a sense of community, they also highlight the unequal burdens of care — where some individuals take responsibility for cleaning while others continue to pollute.

Despite these complexities, conflicts, and dilemmas that come with care (Bartos, 2018; Cox, 2010; Ressiore et al., 2024; Weitzman et al., 2024), daily acts of care are prominent in how shellfish gatherers relate to the mangrove. CMs emphasised the importance of not breaking or cutting down the mangrove trees and respecting them (see Pitt, 2018). In the mangroves, the shellfish gatherers sing, whistle, and make noise to fish *aratu* because they say, 'Aratu likes a party'. The daily fishing practice aims primarily to provide for their families but also reflects a long-term commitment to sustainable fishing. For example, if an *aratu* or a fish is too small or unnecessary, they often return it to the mangrove or river.

Care is both vital and daily. It involves small, often unnoticed gestures that keep everything functioning, like putting the trash out on time or being attentive to human and non-human neighbours' needs. This understanding resonates with the feminist academic care literature, as Mol and Hardon (2020, p. 188) explain: 'The whole of society is constituted by it. Teachers care for their pupils' growth, bakers for those who eat their bread, and customers show care by paying. Calling these activities care foregrounds interpersonal relations and mutual dependence'. This perspective, echoed by Puig de la Bellacasa (2015), suggests that care involves maintaining a web of relations crucial for ecosystem vitality that extends beyond human-centric benefits.

5.2 | More-than-human: Human and Non-Human Relationality

To better understand the more-than-human aspect of care, it is essential to look at its potential to enable and understand connections. Hence, this dimension involves the human and non-human relations in Siribinha. 'Care is embedded in the practices that maintain webs of relationality and is always happening in between' (Puig de la

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BOX 1 Autoethnographic reflection on the dilemmas of everyday care in Participatory Action Research.

Everyday care dilemmas in PAR

During the first fieldwork, Gabriela De La Rosa and the first author developed activities that involved focus groups inspired by PAR and art-based methods. One suggestion from the community was to create signs to raise awareness about pollution and littering in the mangrove, the beach, and the community. As researchers, we considered the resources, time, and materials available in the neighbourhood for making the signs with the community.

Despite the challenge of finding materials in the region around the village, we acquired and brought wooden plaques, acrylic paint, and sealant for wood, hoping to make the signs durable. In March 2022, after producing the signs together, community members and researchers placed them in strategic locations based on community members' suggestions (Figures 6 & 7).

By July 2022, some signs had already disappeared. By April 2023, only three remained standing (Figure 8). Some signs had fallen, termites ate some, and others, we just do not know their whereabouts. These wooden signs highlighted unresolved dilemmas in participatory research practice and the everyday character of care.

Did the short lifespan of the signs indicate a lack of care on our part? Did we fail to choose appropriate materials or consider maintenance adequately? Although we designed and built the signs with the community, should we have planned the entire process more thoroughly before and after installation? Did we miss an essential daily step? What could we have done differently in that situation? How do we reconcile more-than-human care with the practical challenges faced during fieldwork? Does caring in the moment imply a commitment to permanent care? As Mol and Hardon (2020, p.199) note, 'caring (...) is not rule-driven; it is not invested in principles. Instead, it draws on varied resources that may all work, even if in different ways'. We learned that while 'practice and completion of care is paramount' (Raghuram, 2016, p. 520), maintaining care involves dilemmas that must be continually negotiated and re-negotiated over time.

FIGURE 6 Most signs produced during the focus group in March 2022. A total of 11 signs were produced. Photo: First author's own.

Bellacasa, 2017, p.166). Care is a form of relationship that creates relationality while allowing us to move away from binaries (Harcourt et al., 2022).

Relationality becomes clear when one observes practices; still, the knowledge shared orally revealed much about their more-than-human (dis)connections and (dis)respect. Research participants' responses to questions about their connection to Siribinha, whether they felt nature cared for/with them, and their thoughts/feelings/relationships with the mangrove, sea, fish, and other non-humans were highly relevant for reflecting on this dimension.

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FIGURE 7 In August 2022, one of the still-standing signs. April 2023, sign was gone. Photo: Julia Turska (reproduced under permission – CC-BY-NC).

FIGURE 8 One of the three still-standing signs in July 2023. Photo: Fabiana M. C. Santos (reproduced under permission—CC-BY-NC).

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During the interviews, CMs like Malu and João suggested that tourism and money undermined respectful relational practices in Siribinha.

> ... tourism brought a lack of respect
>
> (João, CM)

> When tourism arrived, it brought the money, you start working, you start making money, and when you make money, you become someone else, so you lose that essence.
>
> (Malu, CM)

João's statement underscores the negative influence of activities, like tourism, on Siribinha's traditional care practices. It is an external pressure that disrupts established respectful relationships between humans and non-humans. Both he and Malu mentioned that tourism brought changes that catalyse negative developments in how they relate to other non-human beings—especially the river, sea, and mangroves. João expressly referred to disrespect in human-human relations and human–non-human interactions. While tourism provides essential income from visitors buying drinks and food at local bars, which supports many CMs' livelihoods, many expressed concerns about its negative impacts.

Through participant observation and informal, often nostalgic conversations, Malu shared that Siribinha used to be calmer, with fewer outsiders, a friendlier atmosphere, and less greed. João and another fisher, Bruno, frequently echoed this sentiment: they noted that respect between humans and non-humans had diminished. We understood that they believe that tourism and profit-making are affecting possibilities for respectful, more-than-human care relations (Krzywoszynska, 2015; Weitzman et al., 2024).

Another evident aspect is Sara's (CM) explanation of how, when people want to plant a coconut tree or a lemon tree or 'mess' with nature, they must ask for nature's permission. 'Asking for permission' as a form of acknowledging the agency of non-humans while also understanding the human and non-humans' interconnectedness can also be another more-than-human aspect present in community members (Puig de la Bellacasa, 2017; Weitzman et al., 2024).

For other research participants, human–non-human relationality concerns interdependence and interconnectedness.

> Nature takes a lot of care of us. I can't explain how, but nature takes much care of us. We live through nature. If it wasn't for nature, we wouldn't survive. Everything we have depends on nature.
>
> (Adele, CM)

> Yes, of course [nature cares for us]. The air we breathe, without nature, there is no life... We are also nature; humans are part of nature; we have nature in our physiognomy. In our existence and life....
>
> (Alegra, PM)

While Adele understands there is a dependency on nature for survival, Alegra challenges traditional humans and non-humans' dualities arguing for a more relational position of humans in the web of interdependent lives.

Engagement between humans and non-humans influences other's actions, knowledge, and practices, providing the basis for understanding relationality (Dupuis et al., 2022). Connecting theory and practice, we learn that research participants exemplify how care is fundamentally a relational, interdependent, and respectful practice (Barnes, 2012; Puig de la Bellacasa, 2017; Tronto, 2013). For care to occur, it must often consider non-human agency and, as we see below, demand reciprocity.

5.3 | Reciprocity

Reciprocity extends beyond mere action or interaction; it involves an experience (Ojeda et al., 2022; Kimmerer, 2014) and a process of learning that reflects on encounters between both humans and non-humans (Ojeda et al., 2022). Reflecting on relations between both in Siribinha, we were surprised by how much research participants emphasied reciprocity in understanding care relations. Insights about reciprocity emerged especially from questions like: *When I say the word care, what comes to mind? When do you feel cared for? When do you feel lack of care?* More than half of the interviewed research

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participants shared that they follow the principle of treating others as they wish to be treated, believing that if people do good, good comes back to them. This reciprocity is expressed through statements like: '...[nature] cares for us if we care for her' (Bianca, CM). A response that can indicate that participants view care as a relation. For example:

> To the mangrove, we go to work, search for our sustenance. It gives to us, and we must give to it as well. How? Caring for it as well....
>
> (João, CM)

> If we take care of nature, it takes care of us. Yeah... but if we don't take care, there's no way it can care for us. If we don't take care of nature, we're mistreating it.
>
> (Caetana, CM)

These quotes can indicate the iterative care relations in the exchange between humans and non-humans. Exemplifying that for them caring for non-humans is directly connected to their well-being, however, this principle extends beyond traditional care literature, aligning with Indigenous ideas of reciprocity (Kuokkanen, 2006; Losito, 2022). It involves empathy and considers the perspectives/needs of both humans and non-humans.

João said that he does his best to keep the mangrove clean, respects the closed fishing periods, and tries to engage other CMs in collective action, again evoking respect and interdependence. However, reciprocity can also be troubling:

> From when we sleep to when we get up, we breathe nature. When we open the window and feel the fresh air, [in] all these moments we are being helped by nature. Right? Nature cares for us when we go to the mangrove and catch crabs to eat. Or when we need a good tide to fish, and the tides are in our favor, understand? We are always counting on nature. (...) here we depend a lot on nature. (...) many times, due to nature, New Year and Carnival parties here had to get canceled. If it rains too much, and it blocks the roads (...) sometimes I think she [nature] gets revolted and punishes people. It is like a mother.
>
> (Cauê, CM)

Cauê's reflections illustrate a more nuanced view of reciprocity. He thinks nature is similar to a mother who cares but sometimes also gets angry and punishes her human sons and daughters. Hence, based on his perspective, reciprocity goes beyond a simple transaction, we understand that it is essential to consider non-human agency and respect nature. Santiago also touches upon a nuanced view on reciprocity by saying:

> [nature care] is something you don't see but feel. If you take care of her, she takes care of you. Well, if you plant a coconut tree, it will reap; if you plant a plant, you will be sitting in its shade later, and it will protect you from the sun. This way, it cares for us; it protects us....
>
> (Santiago, CM)

Santiago's quote highlights how reciprocity is related to different temporalities but also questions the ideal of equal exchange. While care relations typically involve unequal positions of power, this does not mean that reciprocal acts cannot occur. Many CMs explained that reciprocity is about appreciating what is received and acknowledging that they should, somehow, give something back. This is not always symmetrical, balanced, or proportional, but something is given back (Kramm, 2020; Mauss, 2003; Ojeda et al., 2022; Van de Pavert & Ressiore, 2023).

We also observed that researchers such as Aurora and Arthur often link relationality, reciprocity, self-care, and planet care as interconnected and interdependent concepts. For example, Aurora states, '...we are nature, aren't we? Nature gives us what we give to her' (Aurora, R). She understands that we are nature, troubling human–non-human. For her, being human is about being an integral part of nature. In that sense, she continues arguing that self-care and 'planet-care' or 'non-human care' are closely related and can even be seen as the same activity. During the interview, she blurs the lines between humans and non-humans (Elton, 2022; Jaque et al., 2021), going beyond interdependence or dependence but suggesting a shared existence shaped by the agency of many beings in the more-than-human world.

Based on the interview with Aurora, we understand that her sense of relationality and reciprocal thinking has also been influenced by her years of work in Siribinha, where she formed close bonds with human and non-human entities. Other participants also echo her ideas; for example, Ana expresses a similar perspective:

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> ... if you care for something or someone, you don't do it for others... you do it for yourself as well.
>
> (Ana, CM)

Here, Ana emphasises that care is not a one-way action but a reciprocal interaction, highlighting how the boundaries between self and others—whether human or non-human—are blurred in acts of care. Care is not purely altruistic; as you care for another being, you are simultaneously caring for yourself, contributing to your own well-being. Ana illustrated this by describing how caring for the plants in her garden is a form of self-care. Similarly, Arthur states

> ... when you do not care, you are not only harming another person, you harm the planet, and you harm yourself.
>
> (Arthur, R)

This reinforces that the well-being of the self, others, and the planet are inseparable. Both quotes illustrate that like Aurora's viewpoint, caring for others is inherently intertwined with caring for oneself, thereby challenging the dichotomy between human and more-than-human and promoting a holistic understanding of interconnectedness. When learning with more-than-human care relations in Siribinha, we have observed that reciprocity involves interdependence, respect, non-human agency, different temporalities, and blurring the lines between humans and nature. However, in this context and more broadly in a world filled with injustices, reciprocity serves as a reminder that care is often marked by asymmetries of power, ability, and resources (Adams, 2020; Ressiore et al., 2024).

5.4 | Fostering flourishing for many

The previous three dimensions all contribute to fostering flourishing for many. Although more-than-human care occurs daily, relationally and reciprocally, it is grounded in the shared objective of both humans and non-humans to live well together. Our use of *flourishing for many* derives from the definition of care—to maintain, continue, and repair the world to live in it as well as possible (Fisher & Tronto, 1990). With connotations of organic growth, diversity, and mutual support, flourishing resonates with the notion that care is integral to achieving justice and supporting sustainable relations beyond mere survival or instrumental gain (Barnes, 2012; Puig de la Bellacasa, 2017). Our understanding of the concept is further informed by Indigenous and local practices, which demonstrate the potential for flourishing and survival despite continuous threats (Krenak, 2020; Losito, 2022; Ressiore et al., 2024; Rodríguez et al., 2024).

In Siribinha, flourishing—living well together—connects to both abundant care as well as carelessness (see Puig de la Bellacasa, 2018). In our observations, Siribinha's abundance relates to, for example, the importance of uniting the community when someone is sick.

> Siribinha for me is my home, my shelter... it's a peaceful and quiet place. (...) The river runs through my backyard and across the street is the sea. It's a small community, built by very hospitable people where everyone helps everyone. Especially if someone has health issues everyone comes together to help.
>
> (Elisa, CM)

Despite personal conflicts, they collectively combine economic, material, and spiritual strengths to help those in need. This unity includes and is supported by the non-human world through the medicinal use of plants (Tng et al., 2021) and the 'healing air' of Siribinha mentioned by many community members.[10]

Another example of *flourishing for many* in Siribinha comes from Cristal (CM), who said during the interview that both she and the mangrove—if it could speak—would ask policymakers (PM) to preserve the environment by caring for it, avoiding pollution, and reducing plastic waste. In informal conversations, some CMs expressed their hopes that the mangrove and local non-humans remain as well-conserved and beautiful in the future as they are now. In our observation, this hope goes beyond sitting and waiting; in Siribinha, it motivates action and informs the current transformative practices of care (Anderson, 2006; Bispo dos Santos, 2023).

As Malu explains, hope is in the relation with the non-human:

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> ... the mangrove of Siribinha is a hope. It is hope because it is green. Hope. When you go close to a tree like this, you feel it. The mangrove is the freshness of the mud. That freshness of the wind on the person, so, for me, mangrove is hope.
>
> (Malu, CM)

Malu's use of senses like the 'freshness of the wind and mud' shows that for her, hope is embodied in specific places and beings, like the mangrove. Her quote illustrates that hope is not an abstract concept but tangible, tied to human–non-human interaction.

Although abundant hope and care foster flourishing, other forms of care are lacking. As discussed, care is a crucial aspect of flourishing, but focusing on its abundance is insufficient for a comprehensive analysis. It was necessary to reflect on what impairs such flourishing, as more-than-human care is sometimes understood through its absence. Some CMs seemed to find it easier to talk about the care absences than about care-full relations, especially in informal conversation. While some expressed resignation to these lack(s), many have stated that they feel forgotten, feel a lack of attention, and feel like they are not being heard. For example, Bianca's struggles:

> [I feel cared for] when we speak, and people listen... [I don't feel cared for] because I'm weak because if I were a rich person, but as I'm poor, black, there's no order, nobody respects.
>
> (Bianca, CM)

Bianca's experience reflects systemic inequality and racism, felt through neglect and disrespect—issues that hinder flourishing for many. Her statement highlights how care and respect are unequally distributed, challenging the community's capabilities to nurture more-than-human care relations. In a more-than-human context, such issues flow between humans and extend their consequences to non-humans. Therefore, when analysing more-than-human carelessness, we see that lack of attention and respect can lead to a lack of representation and disenfranchisement, which are intertwined challenges that affect both humans and non-humans. Lack of care manifests in problems like trash in rivers, declining fish populations, and feelings of distrust and lack of representation among CMs. Additionally, while Siribinha's peaceful landscape attracts tourism, disordered tourism and overfishing by larger boats pose serious threats to local biodiversity, accelerating species extinction and disrupting ecological processes (Lima et al., 2011).

Despite threats and carelessness, the flourishing aspect of more-than-human care remains alive in Siribinha. Bento reminds us that hope resides in collective actions.

> Caring doesn't have to come only from the other person; it's a web. If only one person takes care, it doesn't work. It breaks apart.
>
> (Bento, PM)

The web that Bento mentions, along with the local hopes and lack(s) of care, encourages us to think beyond the local context, illustrating that flourishing for many is challenging and intertwined with structural issues. Despite numerous struggles and exploitation, the community's self-organised more-than-human care practices highlight the interdependence between human and non-human flourishing.

6 | MORE-THAN-HUMAN CARE POTENTIALS

Our open-ended and exploratory approach to more-than-human care offered heterogeneous responses rather than one unifying understanding. Reflecting with Siribinha, more-than-human care became broader and flowed in many directions (see Figure 9), yet it also became situated (Haraway, 1988). Siribinha offered a broad spectrum of more-than-human care examples, inspiring re-imagination of more-than-human care amidst local social and biodiversity conservation challenges. Through the feminist, participatory-inspired interplay of theory and practice, four dimensions of care were identified and discussed. These dimensions reflect the unique context of Siribinha and provide insights for broader applications.

To reflect on the conceptual potentials of more-than-human care, we divided the contributions from our study into three main sectors: (a) Theoretical Insights, (b) Empirical Insights, and (c) Contributions to Biodiversity Conservation.

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FIGURE 9 Word cloud generated with Atlas.ti based on translated answers from the question: When I say the word care, what comes to mind?

6.1 | Theoretical Insights

Our research on more-than-human care shows its capability to make invisible relations visible. Our work with Siribinha CMs revealed much about implicit practices and care relations between humans and non-humans that often go unnoticed in academic research. More-than-human care not only contributes to reflexivity in the community but also, when combined with collective efforts to do research based on PAR, encourages the research team to transform its own relationship with the community. This transformation involves being reflexive about the methods used, paying attention to CMs needs and comfort, viewing care relations as an essential aspect of research, considering differing temporalities of research and community, and discussing research limitations (see also Long et al., 2016). These insights highlight the significance of more-than-human care in rethinking research practices and addressing entrenched inequalities between human and non-human actors.

Our findings resonate with anthropological and critical geography theories that question strict human/non-human dualism and highlight the potential to bridge this divide through more-than-human relations (Descola, 2013; Plumwood, 2003; Whatmore, 2002). At the same time, our findings also provide nuance and local specificity to these wider ontological claims and theoretical debates about more-than-human approaches. One persistent concern about more-than-human approaches relates to their 'flat ontology' (Ash, 2020). Targeting entrenched dualisms of human/non-human and culture/nature also creates an inverted risk of blurring ontological differences to the degree that everything becomes blurred, and no legitimate distinctions remain (Boersma, 2022). For example, Isaacs (2020, p. 3) summarises a range of challenges towards flat ontologies as 'obscuring social differences (e.g. race, class, species) and structure (e.g. colonialism, capitalism),' invisibilising distinctly human concerns, and misleading reasoning through universalising claims of sameness.

Linking more-than-human approaches with feminist and post-humanist care theory reveals a more nuanced picture than a 'flat ontology' with universalising claims of sameness. Care is not flat but socially differentiated, structured by social systems including capitalism, colonialism, and patriarchy (Bartos, 2018; Lugones, 2014, 2020; Ressiore et al., 2024). For example, care burdens are unequally distributed and often involve power differentials between givers and receivers of care (Akotirene, 2019; Barnes, 2012; Case, 2000). More-than-human care centers on complex relations involving diverse humans and non-humans, but it by no means suggests flatness. How care is differentiated, rather than flat, becomes salient through community practice in Siribinha. Since the community is a disenfranchised rural and Black community in one of the economically poorest regions of the country, the lack of care for the community is structured by the class and racial orders of Brazilian society. Caregiving in the community is also unevenly distributed—both in terms of unequal burdens of human care labour and in terms of more-than-human relations. While reciprocity emerged as one of the key dimensions, CMs did not say that humans and non-humans care in the same ways. Their understanding of care stressed power differentials in the relationship between giving and receiving care. Reflecting with Siribinha, the four more-than-human care dimensions challenge a simple human/non-human dualism by pointing towards complex relational entanglements. However, they also point towards intersectional social, geographical, economic, and racial

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differentiation and stratification of these relations rather than suggesting a flat ontology in which relevant differences between actors become lost.

Rather than replacing universal dualism with universal flatness, our reflections with Siribinha point towards the importance of critical geography, post-humanism, and feminism for understanding the diverse expressions of ontologies and care practices. The care relations we described are by no means universal, but they are grounded in a particular place and time. Geographies of care are needed to show the particular care practices' constellations and their connections with local livelihoods. Importantly, this also requires recognition of ontological diversity across different geographies. 'Southern Ontologies' (Ludwig et al., 2024) are not unified as one universal flat ontology that is contrasted with a universalist human/non-human dualism but, instead, emerge through different concepts, practices, and relations that require geographical and local specificity.

6.2 | Empirical Insights

While many authors stress that care cannot be separated from practice (Barnes, 2012; Krzywoszynska, 2015; Mol et al., 2011; Moriggi, Soini, Bock, & Roep, 2020; Tronto, 2013), we truly learned about the importance of practice with the community. The 'Caring with Siribinha' focus group demonstrated how CMs challenge dominant academic views that separate humans from non-humans. This perspective aligns with the ideas of academic thinkers such as Haraway (2016) and Bispo dos Santos (2023), as well as indigenous cosmologies like those of Krenak (2020) and in Losito's book (2022), among others. CMs articulated that the reflections about more-than-human care mattered for inspirational factors, but only when connected to action. Cristal (CM) remarked, 'Yes, these are all nice things we said [during interviews], but people need not only to say. They also need to do!'. This sparked immediate discussion on actions. Suggestions included: (i) another cleanup day, (ii) a performance or strike to raise awareness, (iii) art made with plastic and waste for strategic display, (iv) a workshop to create public trash bins from recycled materials, and (v) more signs encouraging people not to pollute.

The urge to act challenged us. The first author initially saw the 'Caring with Siribinha' focus group as a research cycle closing, but CMs reminded her of PAR's cycles of action and reflection (Kindon et al., 2007). Brazilian quilombola thinker Nego Bispo says we are in constant 'start, middle, start' (*início, meio, início*) (Bispo dos Santos, 2023; Bispo dos Santos & Mayer, 2020). This non-linear approach aligns with PAR and feminist care cycles (Moriggi, Soini, Bock, & Roep, 2020; Van de Pavert & Ressiore, 2023) in their ongoing iterations. In that sense, the focus group reminded us that more-than-human care is constant and iterative. Action calls for reflection, and reflection calls for action.

6.3 | Insights for Biodiversity Conservation

Conservation failures often arise as a result of, to name a few, top-down decision-making, colonial legacies, and the exclusion of local and traditional knowledge and relationships (Boogaard, 2021; Rodary, 2008). The concept of more-than-human care, however, offers a framework that dialogues with local knowledge and practices and challenges conventional dichotomised conservation approaches (Ressiore, 2019). We learned that reflecting on more-than-human care with CMs reveals that merely discussing and documenting ideas is insufficient. The reality of care between humans and non-humans in conservation and beyond is complex and messy requiring strategies to manage conflict, incorporate diverse perspectives, and foster empathy. This messy reality can become fertile ground to invite people to put themselves in the shoes of others while developing novel biodiversity conservation practices.

Learning from and integrating care practices can contribute to a plural, respectful, and transformative approach to conservation. We highlight their essential role in living well together by placing more-than-human care practices at the centre. This approach differs from traditional notions of control or protection (Bartos, 2018; Singleton, 2010; Weitzman et al., 2024) by emphasising political and collective dimensions of care (Diver et al., 2024). Our investigation into more-than-human care in Siribinha highlights its transformative potential in challenging the *status quo* of environmental and economic exploitation threatening humans and non-humans alike and their complex relations in practices such as artisanal fishing.

While the conceptual potential of more-than-human care lies in imagining, re-imagining, and practising alternative relations, we also acknowledge new challenges it may introduce. For instance, it raises complex questions about the role of human livelihoods and social justice in human–non-human relations (Tsing et al., 2019). These tensions are widely

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discussed in human-wildlife conflict literature (Hodgson et al., 2020). However, in our case, more-than-human care did not center on non-human needs at the expense of human needs. Instead, it emphasised the interconnectedness of human and non-human needs, such as the shared fate of local fishing practices and the conservation of the Itapicuru estuarine ecosystems.

More-than-human care invites 'an openness to new and other ways of being a "we"' (Krøijer & Rubow, 2022, p. 381), emphasising reciprocity and flourishing for many. This points to a redefined 'we' grounded in cooperation, respect, mutual aid, and empathy.

7 | CONCLUDING THOUGHTS

Based on our findings, we propose a synthesised and situated summary of this complex concept: more-than-human care is vital; it is based on daily practices and grounded on relations of interdependence and connection between humans and non-humans. The concept can support approaches that amplify the gaze on human and non-human care relations, allowing the invisible to become visible. More-than-human care is permeated by reciprocity—which is not free of power asymmetries. In theory and practice, the concept aims towards flourishing for as many as possible.

To enact and research with more-than-human care, we invite you to pay attention to and engage with stories, lives, and relations that are not yours. This means looking through the eyes of someone or something else but seeing with your own eyes from a position that is not your own (Arendt, 1989; Ormond & Vietti, 2022; Ressiore, 2022), allowing partial glimpses into a plurality of perspectives and ways of being and caring.

The conceptual potential of more-than-human care lies in its capacity to inspire imagination and instigate action for transformation beyond frames where humans and non-humans are treated as competitors with incompatible interests or treated as equals based on a flat ontology. Emphasising the hopeful character of more-than-human care does not deny the complexity of aligning the diverse needs of actors involved. Instead, it calls us to imagine a future that embraces reciprocity as a foundation for flourishing—a 'future that needs, with effort, to be identified, imagined, and pursued' (Cooper, 2014, p. 220). A future is not only to be imagined but claimed through collective action.

Our research highlights the importance of geographical and interdisciplinary studies in consistently making room, recognising, and valuing marginalised care practices—both human and non-human. We argue that more-than-human care represents a significant avenue in opening this space to instigate conservation efforts to become more plural, respectful, and transformative. This potential lies in understanding humans and non-humans as reciprocal agents, inviting us to rethink biodiversity conservation practices, and integrating community perspectives and care as guiding principles. Thus, more-than-human care could allow marginalised human and non-human perspectives to also influence conservation decision-making and practices.

Future research could further investigate the diverse scope of more-than-human care, which spans between multiple concepts, theories, practices, and fields of knowledge. Its diversity offers broad potential but also presents challenges. To avoid overgeneralisations that might undermine the political relevance of care debates, we recommend three key approaches: (a) situate studies within the feminist care literature, acknowledging the foundational work that enables the discussion, theorisation, and application of various care approaches and insights; (b) by focusing on specific cases make sure power dynamics of care become visible rather than obscured; (c) pursue studies on specific aspects of more-than-human such as affect, conflict, reciprocity, power, maintenance, protection, among others.

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CONFLICT OF INTEREST STATEMENT

No conflicting interests to declare.

DATA AVAILABILITY STATEMENT

Data are available on request due to privacy/ethical restrictions.

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ENDNOTES

[1] In this article, the term 'non-humans' refers to both biotic and abiotic elements of nature. Our intention is not to reinforce the human-nature dichotomy or overlook the important debates around the culture-nature divide (as discussed by Descola, 2013; Plumwood, 2003). Instead, we use 'non-human' for the sake of clarity for both the reader. While alternative terms like 'nature,' 'earthlings,' or 'other-than-humans' could have been used, our choice for the article aligns with the feminist post-humanist care literature. As demonstrated throughout the article, the boundaries between humans and non-humans become increasingly blurred, with care occurring between and through these interconnected entities.

[2] Reflecting on this concept, we draw on the idea that concepts act as 'devices that draw on the complexities of the empirical world to open our theoretical imagination to things as they might be' (Cooper, 2014, p. 26; see also Deleuze & Guattari, 1994; Gane, 2009). Concepts help understand and communicate about the world, producing knowledge with stabilising or destabilising effects (Cooper, 2014). In the movement between imagination and actualisation (ibid.), we explore the conceptual potential of more-than-human care.

[3] We use interdependence to give a sense of both dependence and interdependence.

[4] We conducted an integrative literature review that focused on the term 'more-than-human care' as well as the combination 'more-than-human AND care,' using Scopus and Google Scholar as search engines. Research Rabbit was employed to uncover further connections between the identified literature. To ensure relevance, we applied filters to exclude references related to healthcare, nursing, intensive care, and medical studies, aligning the results with the scope of our research. While we recognize that terms like 'ecologies of care,' 'ecological care,' 'care ecologies,' 'green care,' 'multispecies care,' and 'non-human care' offer valuable insights, our review prioritised works that directly referenced 'more-than-human care.' Nevertheless, some of the relevant literature under these related terms was also reviewed and they are mentioned in this article. In addition to the English-language search, we conducted further research in Portuguese to identify both academic and non-academic works that discuss care within the context of human and non-human relationships. For this, we used the terms *cuidado* and *cuidar*, applying similar healthcare-related filters. In Portuguese, the search was more effective when we examined the references within the limited articles and books that addressed care in human and non-human interactions.

[5] During conversations and interviews with research participants the word non-human (*não humano* in Portuguese) was less tangible and too abstract, therefore a choice was made to use the word 'nature' or 'nature being' (*natureza* or *seres da natureza*, in Portuguese) to refer to non-humans.

[6] Before this question the first author would often ask them to mention a nature being they liked or that they related with a lot in Siribinha. The beings most chosen were sea, shark, birds, mangrove, crabs, dolphin, moon, river, coconut tree, fish, etc.

[7] Interviewing local policymakers was crucial due to their involvement in the creation of a municipal protected area classified as a natural monument according to the Brazilian National System of Units for Nature Conservation (SNUC, Law no 9.985, July 18th, 2000), the Natural Monument Peninsula of Siribinha. According to SNUC, 'a Natural Monument can be composed of a private or public area, with the objective of preserving rare, singular places or places of great scenic beauty' (De La Rosa, 2020:16). UFBA researchers collaborate with the local communities of Siribinha and Poças to empower their participation in conservation policy development, advocating for bottom-up decision-making processes by the Secretary of Environment and Economic Development. However, limitations arise as the local government's commitment to including local knowledge and interests remains relatively weak, leaving many CMs feeling unheard regarding the conservation area and its implementation; more details about this process refer to De La Rosa (2020) and De La Rosa et al. (2024).

[8] 'Aratu' refers to various crabs of the *Sesarmidae* family. More specifically, *Goniopsis cruentata* is the species fished, consumed and often present in Siribinha's daily life.

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[9] 'Massunim' (scientific name: *Anomalocardia brasiliana*) is a shellfish found at the confluence of seawater and freshwater, such as in river estuaries or lagoons. It is seasonally gathered in the Itapicuru river, near the mangroves and consumed by the community of Siribinha.

[10] Several community members, including Malu, shared that before moving to Siribinha, she suffered from asthma and rhinitis, but believes the air there healed her. Eleven other CMs echoed this idea of 'healing air' in interviews.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

Annex 1. Questions that guided semi-structured interviews.

Annex 2. Original and translated quotes.

Annex 3. Caring With Siribinha Focus Group (Cuidar com Siribinha, Cuidar em Siribinha) - 2/5/2023.

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