

Perception of nature through children's drawings in a *quilombola* community

Percepção da natureza por meio de desenhos infantis em comunidade quilombola

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ABSTRACT

The Brazilian semi-arid region faces socio-environmental challenges characterized by water scarcity, soil degradation, and anthropogenic pressures on the Caatinga biome. In this context, understanding children's environmental perceptions is crucial for informing educational practices and conservation strategies. This study aimed to assess the nature perceptions of children in grades 1 through 3 of elementary school within a *quilombola* community located in the Boqueirão da Onça Environmental Protection Area (EPA), using drawings as a methodological tool. Elements within the drawings were analyzed, taking into account total frequency and differences by age and sex (female and male). The results revealed a predominance of flora and fauna in the representations, whereas abiotic and anthropogenic elements appeared less frequently. The study concludes that children's drawings serve as an effective tool for understanding the emotional bonds children form with nature, while also pointing toward pathways for preservation within the EPA and the valuing of local knowledge in environmental education.

Keywords: Human-nature relationship; Socio-environmental learning; Traditional territories; Project-based methodology.

RESUMO

O semiárido brasileiro enfrenta desafios socioambientais, marcados pela escassez hídrica, pela degradação dos solos e pelas pressões antrópicas sobre a Caatinga. Nesse contexto, a compreensão da percepção ambiental infantil torna-se fundamental para subsidiar práticas educativas e estratégias de conservação. Este estudo objetivou avaliar a percepção da natureza por crianças do 1º ao 3º ano do Ensino Fundamental em uma comunidade quilombola localizada na Área de Proteção Ambiental (APA) Boqueirão da Onça, utilizando desenhos como instrumento metodológico. Foram analisados os elementos dos registros gráficos, considerando a frequência total e as diferenças entre os sexos. Os resultados revelaram a predominância da flora e da fauna nas representações, enquanto os elementos abióticos e antrópicos foram menos frequentes. Conclui-se que os desenhos infantis constituem uma ferramenta eficaz para compreender os vínculos afetivos das crianças com a natureza e apontam caminhos para a preservação em uma APA e para a valorização dos saberes locais na Educação Ambiental.

Palavras-chave: Relação ser humano-natureza; Aprendizagem socioambiental; Territórios tradicionais; Metodologia projetiva.

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Introduction

The Northeastern semiarid region is characterized by frequent droughts, marked spatial and temporal variability in rainfall, and prolonged dry spells, all of which exacerbate the region's climate vulnerabilities. Compounding these issues are soil degradation, water scarcity or contamination, and the predatory exploitation of flora and fauna—factors that compromise the integrity of local ecosystems and heighten the risk of desertification, thereby threatening the natural and cultural livelihoods of rural communities. In the Boqueirão da Onça Environmental Protection Area (EPA)—a Caatinga conservation unit with significant sociocultural and ecological diversity—these challenges impact both environmental conservation and the preservation of traditional ways of life (ICMBio, 2025).

In this context, Environmental Education (EE) serves as a strategic tool for fostering environmental perceptions by integrating local, cultural, and ecological knowledge, thereby promoting a sustainable quality of life. Environmental perception extends beyond technical knowledge to encompass symbolic representations, daily practices, and cultural values, and is cultural and contextual in nature. Research conducted in EPAs and Conservation Units (CUs) demonstrates that resident communities develop distinct environmental perceptions, recognizing both the utilitarian value of natural spaces and their importance to cultural identity (Bento-Silva et al., 2015). Studies on environmental perception in EPAs—such as the one conducted in Jenipabu—highlight that local knowledge contributes to understanding patterns of use, conservation, and conflict regarding specific species or environments (Xavier et al., 2024).

In the early stages of formal education—early childhood education and the first years of elementary school—emphasis is placed on fostering care, respect, and interaction between children and the natural environment and local culture. Preschools and daycare centers are ideal settings for the development of initial environmental, sensory, and emotional impressions. However, many teachers lack adequate training in environmental sciences or in methodologies that integrate subject matter with students' lived realities; this contributes to a reliance on teaching materials that lack context and limits the connection between the school and the community.

Recent studies reinforce these propositions; for instance, research in the Tapajós National Forest found that children from riverside communities began to value pro-environmental behaviors after experiencing significant contact with nature, including recognizing individual and collective responsibilities for environmental stewardship (Novais and Lauer-Leite, 2024). Another study conducted at a conservation unit in Bahia demonstrated that interpretive visits to protected areas strengthen young people's emotional connection to biodiversity, broadening their perception of natural elements and their interactions with the environment (Profice et al., 2023). In EPAs closely linked to surrounding communities—such as the Jenipabu EPA in Rio Grande do Norte—residents are well-acquainted with species that are highly

visible or part of their daily lives but are unfamiliar with cryptic or less conspicuous species; this highlights a partial perception shaped by physical and cultural proximity (Xavier et al., 2024).

The Boqueirão da Onça EPA provides a suitable setting for investigating how these cultural, environmental, and age- and sex-based (female and male) dimensions intertwine in *quilombola* children's perception of nature. Thus, this study aimed to assess children's environmental perceptions, identify potential age- and sex-based (female and male) differences in the elements represented, and determine how these representations reflect or diverge from perceptions observed in other EPAs across Brazil.

Theoretical framework

Semiarid region

The Brazilian semiarid region is characterized by the predominance of the Caatinga biome, hot and dry climatic conditions, and shallow soils with low organic matter content, limited nutrient availability, and reduced water-holding capacity (Silva et al., 2010). These characteristics render the regional system ecologically fragile, making it a socio-ecological system that is highly sensitive to environmental disturbances and transformations resulting from human activities (Berkes and Folke, 1998; Folke, 2006). In this context, the environmental dynamics of the semiarid region result from the continuous interaction between biophysical factors and the social, economic, and cultural processes that shape the use and management of natural resources.

Recent studies demonstrate that land-use changes and anthropogenic processes have intensified soil degradation and altered water fluxes, with direct implications for evapotranspiration and water availability in the biome (Santos et al., 2023). These transformations reflect global trends observed in arid and semiarid regions, where land-use changes and environmental pressures contribute to ecosystem degradation and increased environmental vulnerability (Reynolds et al., 2007; Maestre et al., 2016). The intensification of these processes highlights the complexity of interactions among climate, soil, vegetation, and human activity, underscoring the need for integrated approaches to understand the ecological dynamics of the semiarid region.

The loss of native vegetation cover is a key factor associated with alterations in regional ecological processes. The Caatinga, recognized as South America's largest seasonally dry tropical forest, has high biodiversity and ecological significance, while also playing a fundamental role in maintaining the region's climatic and hydrological balance (Silva et al., 2018). However, in recent decades, this biome has experienced a significant reduction in its original vegetation, primarily due to agricultural and livestock expansion—including conversion to pasture and cropland—and fragmentation linked to the development of commercial projects and infrastructure works. Long-term spatial analyses indicate a consistent decline in native vegetation between

1985 and 2019, resulting in the loss of millions of hectares of natural cover (Rocha et al., 2024). Recent studies point to a marked increase in deforestation rates between 2020 and 2022, highlighting intensified human-induced pressures on the biome (Costa et al., 2024).

The conversion of native vegetation to productive uses significantly alters the structure and functioning of local ecosystems. Experimental evidence demonstrates that such changes affect soil respiration, carbon dynamics, and essential physicochemical properties, directly interfering with water regimes and moisture availability (Oresca et al., 2024). These alterations compromise the stability of ecological processes and exacerbate environmental degradation, increasing the vulnerability of natural systems and intensifying desertification and the loss of ecosystem services.

This environmental dynamic is intrinsically linked to regional socioeconomic conditions. The semiarid region is home to a significant portion of the Brazilian population, whose livelihoods depend directly on local natural resources, and whose economies are predominantly based on agriculture, livestock farming, and traditional land management practices. Recurring drought events, combined with recent environmental changes, have significant economic, social, and ecological impacts, necessitating integrated land management strategies and public policies to support regional sustainability (Oliveira and Lindoso, 2014; Agência Brasil, 2024). In this context, understanding the relationship between society and the environment is crucial for promoting conservation and environmental adaptation strategies.

Given the high level of socio-ecological vulnerability and the intense interaction between human communities and the natural environment, the analysis of environmental perception is a relevant approach to understanding how different social groups interpret and relate to the territory. The way local populations perceive natural elements influences practices regarding environmental use, conservation, and management, a factor of particular significance in specific socio-cultural contexts, such as the traditional communities of the Caatinga.

Environmental education

EE constitutes an interdisciplinary field focused on a critical understanding of the relationships between society and nature, involving educational processes that integrate the ecological, social, cultural, and political dimensions of environmental issues. More than merely transmitting environmental content, EE seeks to foster the development of values, attitudes, and practices oriented toward sustainability, social participation, and the transformation of relationships with the territory (Loureiro, 2004; Sauv , 2005a).

From a theoretical standpoint, various approaches have guided the field of EE. Sauv  (2005b) highlights multiple currents—including the naturalist, conservationist, critical, and sociocultural—that emphasize distinct forms of relationship with the environment. Among these perspectives, critical EE holds particular significance by framing environmental issues as complex, socially constructed phenomena

linked to historical, cultural, and economic processes (Loureiro, 2004). From this perspective, EE contributes to the development of individuals capable of critically interpreting socio-environmental reality and acting to transform it.

In the Brazilian context, EE has been conceived as a fundamental tool for promoting environmental citizenship and fostering sustainable practices, particularly in regions characterized by socio-environmental vulnerability, such as the semiarid region. Jacobi (2003) highlights that EE plays a strategic role in building a collective environmental consciousness, encouraging social participation and the shared management of natural resources.

In the Brazilian semiarid region, EE plays a particularly significant role by contributing to the redefinition of relationships with the territory and the development of adaptive strategies in the face of adverse environmental conditions. In this context, educational practices tailored to local realities foster the valuing of traditional knowledge, the strengthening of territorial identity, and the promotion of sustainable practices.

Recent empirical evidence demonstrates the transformative potential of EE when structured around direct experiences in natural environments, experiences that foster an emotional connection with nature, psychological well-being, and pro-environmental behaviors (Pirchio et al., 2021; Van de Wetering et al., 2022). Research conducted at a conservation area in Bahia showed that interpretive visits and field activities strengthen emotional bonds with biodiversity and broaden the understanding of interactions between society and nature (Profice et al., 2023). Similarly, pedagogical practices tailored to the specific characteristics of the semiarid region contribute significantly to fostering environmentally conscious citizens, although challenges regarding teacher training and the integration of EE into school curricula persist (Severiano and Saldanha, 2024).

Furthermore, the literature highlights the role of EE in the conservation of the Caatinga biome and in strengthening the socio-environmental identity of local communities by fostering a critical understanding of regional environmental issues and encouraging sustainable practices (Oliveira and Florentino, 2023). International studies indicate that participatory and non-formal methodologies in EE and Agroecology foster collective natural resource management processes, community strengthening, and the development of place-based agroecological practices (Rivera-Ferre et al., 2021).

Another relevant aspect concerns the role of EE in deconstructing stereotypes historically associated with the semiarid region, fostering more complex and contextualized perceptions of the area and its socio-environmental potential (Barbosa and Santos, 2015).

Despite these advances, there remains a scarcity of systematic empirical studies investigating EE in traditional communities, particularly in *quilombola* territories and EPAs within the semiarid region. This gap highlights the need for research that analyzes how educational processes shape environmental perception in specific sociocul-

tural contexts, thereby underscoring the relevance of studies aimed at understanding the relationships among education, culture, and environmental conservation in these communities.

Environmental education in early childhood education

EE in early childhood education constitutes a formative process aimed at developing sensitivity and perception, as well as fostering values related to the environment, from the earliest years of life. At this educational stage, learning occurs predominantly through experience, interaction with the environment, and the construction of meaning based on daily life experiences; this places the sensory, affective, and cultural dimensions of the relationship between the child and nature at the center of the process (Sauvé, 2005b; Tiriba, 2010).

In the field of EE, the sociocultural and critical approaches have guided educational practices aimed at children, viewing the child as an active agent in constructing knowledge and interpreting their socio-environmental context. This perspective emphasizes that the development of environmental awareness is not limited to the acquisition of ecological content but involves the formation of values, attitudes, and emotional bonds with the environment, mediated by social and cultural experiences (Loureiro, 2004; Sauvé, 2005a). Thus, EE during childhood helps shape individuals capable of establishing relationships of care, belonging, and responsibility with the territory.

In this context, EE plays a significant role in shaping children's environmental perception, understood as a process of interpreting and assigning meaning to the environment based on lived experiences. Studies indicate that pedagogical practices grounded in play-based activities, direct experiences with nature, and sociocultural contextualization foster the development of environmental sensitivity and an understanding of the relationships between nature and culture from childhood onwards (Tiriba, 2010; Carvalho and Toniol, 2012).

In the context of the Brazilian semiarid region, EE in early childhood education takes on particular significance when the region's ecological and sociocultural specificities are considered. Valuing the Caatinga biome, local knowledge, and traditional ways of coexisting with the environment helps strengthen territorial identity and build a more integrated relationship with the natural world. Research conducted in the semiarid region demonstrates that contextualized educational practices foster an appreciation of local culture and the development of environmental awareness from the earliest years of schooling (Lima et al., 2025).

Thus, EE in early childhood education serves as a privileged space for fostering socio-environmental values, developing ecological awareness, and building emotional bonds with nature, thereby establishing a fundamental basis for educational processes aimed at sustainability and environmental conservation.

Environmental perception through drawings

Environmental perception refers to the set of interpretations, meanings, values, and experiences that individuals construct regarding the environment in which they live, encompassing the cognitive, affective, cultural, and symbolic dimensions of the society-nature relationship (Tuan, 1990; Sauvé, 2005b). In the field of EE, children's environmental perception holds particular significance, as it allows for an understanding of how children interpret, represent, and attribute meaning to the natural and social elements present in their daily lives.

During childhood, the construction of environmental perception is strongly mediated by the sensory, emotional, and sociocultural experiences formed with the environment. International studies demonstrate that direct interaction with nature fosters the development of emotional bonds, a sense of belonging, and ecological awareness from the earliest years of life (Chawla, 1998; Kellert, 2002). In this context, the child-nature relationship is not limited to the objective recognition of environmental elements but also involves symbolic and subjective processes linked to territorial and cultural experiences.

Children's drawings have been widely used as methodological tools in research on environmental perception because they provide access to subjective, symbolic, and affective content that children often do not fully verbalize (Golomb, 2004). As a graphic language and a form of symbolic representation of reality, drawing enables understanding of how individuals cognitively organize their experiences and express the meanings they attribute to the environment, including socio-environmental perceptions, values, and subjective representations related to the lived environment (Santos and Teixeira, 2017). In environmental studies, this approach has been employed to investigate social representations of nature, emotional bonds with the territory, and processes of environmental identity construction.

Research conducted in diverse sociocultural contexts indicates that trees, flowers, and animals are among the elements most frequently depicted in children's drawings of nature, reflecting daily proximity to and a strong emotional connection with living organisms (Howlett and Turner, 2023). Studies also suggest that less tangible elements—such as water, the atmosphere, and soil—tend to be less frequently represented graphically by children, particularly in contexts of environmental vulnerability (Silva et al., 2020).

In the Brazilian semiarid region, children's drawings serve as an important tool for understanding the relationships between childhood, territory, and the environment, particularly within traditional communities. Studies conducted in the Caatinga biome demonstrate that children's graphic representations often express a sense of belonging, daily experiences, and ecological knowledge associated with the territory they inhabit (Bitencourt et al., 2014; Lima et al., 2025). Thus, analyzing these drawings makes it possible not only to identify elements perceived by the children but also to understand the cultural and emotional dimensions of their relationship with nature.

The importance of environmental perception in *quilombola* communities for the preservation of the Boqueirão da Onça EPA

Environmental perception is a field of inquiry focused on understanding how individuals and social groups interpret, represent, and assign meaning to the environment in which they live, factors that influence their practices regarding the use, management, and conservation of natural resources. This concept encompasses the cognitive, cultural, and affective dimensions of the society-nature relationship and is fundamental to understanding the interaction between human communities and their territories (Tuan, 1990; Sauv  , 2005b).

In the context of traditional communities, environmental perception is strongly associated with local ecological knowledge, historically built through direct experience with the environment and passed down from generation to generation. Often referred to as traditional knowledge or local ecological knowledge, this expertise guides sustainable natural resource use, forms of social organization, and strategies for adapting to the territory's specific environmental conditions (Berkes, 2017). In *quilombola* communities, such knowledge is deeply linked to cultural identity, productive practices, and symbolic relationships with nature.

Literature on environmental governance highlights that incorporating the local knowledge and perceptions of traditional communities contributes to the participatory management of protected areas and the development of socially contextualized conservation strategies (Folke, 2006; Berkes, 2017). In this regard, the environmental perceptions of these communities can influence conservation processes by guiding management practices, identifying environmentally sensitive areas, and mediating between public policies and local realities.

In the Caatinga biome, characterized by high socio-environmental vulnerability and a strong reliance on natural resources by local populations, understanding community environmental perceptions is particularly relevant for analyzing the dynamics of land use and conservation. Studies conducted in traditional semiarid communities indicate that local knowledge contributes to an understanding of natural cycles and the adoption of practices adapted to the region's environmental conditions (Lima et al., 2025).

In the case of the Boqueirão da Onça EPA, investigating the environmental perceptions of *quilombola* communities makes it possible to understand how different forms of knowledge and territorial experience influence relationships with the environment and conservation processes. Thus, analyzing these perceptions constitutes an important approach to understanding the interactions between culture, territory, and biodiversity within the context of protected areas.

Materials and methods

Study area

The study was conducted with students from the Quilombola

Rural School located in Lage dos Negros, a *quilombola* community situated within the Boqueirão da Onça EPA in the municipality of Campo Formoso, Bahia, Brazil. The institution serves 291 students, ranging from early childhood education to the early years of elementary school, the majority of whom come from low-income families.

The target population consisted of 66 students, aged 6 to 10 years, enrolled in grades 1 through 3 of elementary school. A non-probability convenience sampling method was used, comprising students present at the school on the data collection days who had authorization to participate in the study. No formal refusals were recorded during the activity. The study was approved by the Research Ethics Committee under the Certificate of Presentation for Ethical Appreciation (CAAE) No. 72896223.1.0000.5208.

Data collection procedure

Data collection took place during a graphic representation activity in which students were invited to create a drawing of nature. They were asked not to worry about the aesthetic quality of their work but to freely represent whatever came to mind when thinking about the theme. There was no prior discussion or pedagogical intervention before the activity; the only instruction given was: "Draw what comes to mind when we speak of nature." The activity lasted 60 minutes and used standard white paper, graphite pencils, colored pencils, crayons, and erasers.

Drawing was incorporated into the study as a research tool, grounded in the projective methods approach; this approach posits that symbolic and expressive productions provide access to the cognitive, affective, and representational dimensions of individuals' experiences. Within projective methods, graphic expression is understood as a means of externalizing subjective content and meanings attributed to the environment, thereby enabling the analysis of social representations, lived experiences, and individual perceptions of the territory (Golomb, 2004; Howlett and Turner, 2023).

In the context of childhood, drawing serves as a privileged language for expressing and representing reality, providing access to conceptions, values, and interpretations that children do not always verbalize. Studies indicate that children's graphic productions reflect lived experiences, constructed knowledge, and relationships established with the sociocultural environment and are widely used in research on environmental perception and the representation of the surroundings (Profice et al., 2023).

Data analysis

The drawings were analyzed individually using categorical content analysis (Bardin, 1977), identifying the presence or absence of 10 predefined categories: feeling, scribble, house, other structures, atmosphere, fauna, flora, human figure, ground, and water resources.

The categories were defined based on the literature regarding environmental perception and children's graphic representation.

The data were organized in a binary format, based on the presence (1) or absence (0) of each category in the drawings. Relative occurrence proportions were calculated for each variable, and comparative analyses were performed by participants' sex and age, as well as relative to the total sample proportion.

To test for statistical differences between the groups, the chi-square test and Fisher's exact test were applied, adopting a significance level of 5%. Statistical analyses were performed using R software (R Core Team, 2017)—specifically the `prop.table`, `chisq.test`, and `fisher.test` functions—with Excel (2024) used for data organization.

Validation procedure

To ensure the reliability of the analysis, a validation procedure for the categorization was adopted. Initially, analytical categories were defined based on specialized literature. Subsequently, the drawings were evaluated independently by two previously trained researchers. The reliability of the drawing categorization was assessed using Cohen's Kappa coefficient and the percentage of agreement between the two independent raters. The results indicated near-perfect agreement for the categories of feeling, fauna, flora, and water resources (Kappa = 1.00; agreement = 100%), demonstrating high consistency among raters in identifying these elements. In contrast, the categories of scribble, house, other structures, atmosphere, human figure, and ground yielded Kappa values classified as weak. It is worth noting that even when the raw percentage of agreement was moderate, such as for human figure (63.6%) and ground (51.5%), the Kappa coefficient remained low, indicating that a significant portion of this agreement could be attributed to chance. This pattern is consistent with the nature of these categories, as their identification relies more heavily on the rater's interpretive inference, unlike visually unambiguous elements such as flora and fauna. Consequently, results regarding the categories with lower agreement should be interpreted with caution and given less analytical weight than those with near-perfect agreement, which underpin the study's main findings. This procedure aimed to ensure consistency, reliability, and reproducibility of the classification of the represented elements.

Results and discussion

Of the 291 students at the Quilombola Rural School—aged 6 to 10 and enrolled in grades 1 through 3 of elementary education—66 participated in the study, representing approximately 22.68%; of these, 39 were female, and 27 were male.

The children organized themselves to carry out the proposed activity and demonstrated a high level of involvement, displaying behaviors indicative of well-being and relaxation while creating their drawings. This pattern suggests that the activity was perceived as a playful experience—distinct from the classroom routine—which fos-

tered an environment of spontaneous expression and creative engagement. Although these observations are qualitative in nature, such involvement suggests that drawing served as an effective expressive tool for accessing environmental representations, reinforcing its relevance as a projective technique for investigating children's perceptions (Figure 1).

Regarding the age profile of students by sex (female and male), it is observed that the largest group of girls is six years old, whereas the majority of boys are seven years old (Figure 2).

The analysis revealed a marked predominance of natural elements, especially flora (92.42%) and fauna (60.61%), highlighting that living nature holds a central position in the environmental perception of the children from the studied *quilombola* community (Figure 3).

This pattern aligns with international studies indicating that trees, flowers, and animals are the components most frequently depicted in children's drawings of nature, reflecting their everyday proximity to and emotional bond with the environment (Howlett and Turner, 2023).

The prominence of vegetation can be interpreted in light of the socio-environmental context of the Caatinga, where flora plays a foundational role in the landscape and the daily lives of traditional communities. Thus, its frequent appearance in the drawings reflects not only ecological visibility but also dimensions of identity and symbolism associated with the territory (Sousa et al., 2011). Fauna, in turn, acts as an affective mediator in the child-nature relationship, fostering curiosity and a sense of belonging, an aspect widely documented in the literature on EE (Myers Jr. and Saunders, 2002).

In contrast, abiotic components such as ground (50.00%), the atmosphere (39.39%), and water resources (16.67%) were less frequent (Figure 3). The low representation of water, in particular, may be linked to the water scarcity characteristic of the semiarid region, which influences daily experience and children's mental imagery (Silva et al., 2020). Studies indicate that elements that are less tangible or less visually prominent tend to be less frequently depicted graphically, explaining the intermediate or low representation of these components (Silva and Santos, 2019).

The limited presence of anthropogenic elements—human figure (22.73%), house (10.61%), and other structures (10.61%)—suggests that children tend to associate nature predominantly with non-urbanized spaces devoid of direct human presence (Figure 3). A similar pattern was identified by Prestes (2021), indicating that, across various school contexts, nature is frequently depicted as a “naturalized” setting with minimal inclusion of social elements.

The subjective dimensions—specifically feeling (19.70%) and scribble (21.21%)—are methodologically relevant, even though they appear less frequently (Figure 3). The recording of feelings, however minor, demonstrates that environmental perception is not limited to the physical representation of the environment but also encompasses affective and symbolic content. Studies indicate that children's draw-

ings often express belonging and affection toward nature, revealing emotional dimensions of environmental identity (Howlett and Turner, 2023). Thus, quantitative data complement the qualitative dimension of perception, reinforcing the interpretive validity of the adopted methodology.

When age and sex (female and male) were considered, the analysis revealed a similar general pattern regarding the centrality of flora and fauna, albeit with interpretative nuances (Figure 4). Girls displayed a higher frequency of natural and subjective elements, whereas boys proportionally included more human figures and built structures.

The literature indicates that variations by age and sex (female and male) can influence how children represent the environment, reflect-

ing sociocultural processes of socialization and symbolic differentiation (Golomb, 2004). These results suggest that environmental perception is permeated by cultural dimensions, including age and sex (female and male) markers.

Overall, both in the aggregate analysis and in the analysis stratified by sex, the results indicate that the environmental perception of *quilombola* children is strongly rooted in the living natural world, particularly plants and animals, while abiotic and anthropogenic elements play a secondary role. This finding underscores the potential for EE to engage with children's internalized knowledge, while also fostering a greater appreciation for less visible environmental aspects (such as soil, water, and air) that are crucial to the preservation of the Boqueirão da Onça EPA.



Figure 1 – Drawings by students from the Quilombola Rural School located within the Boqueirão da Onça EPA, Bahia, Brazil

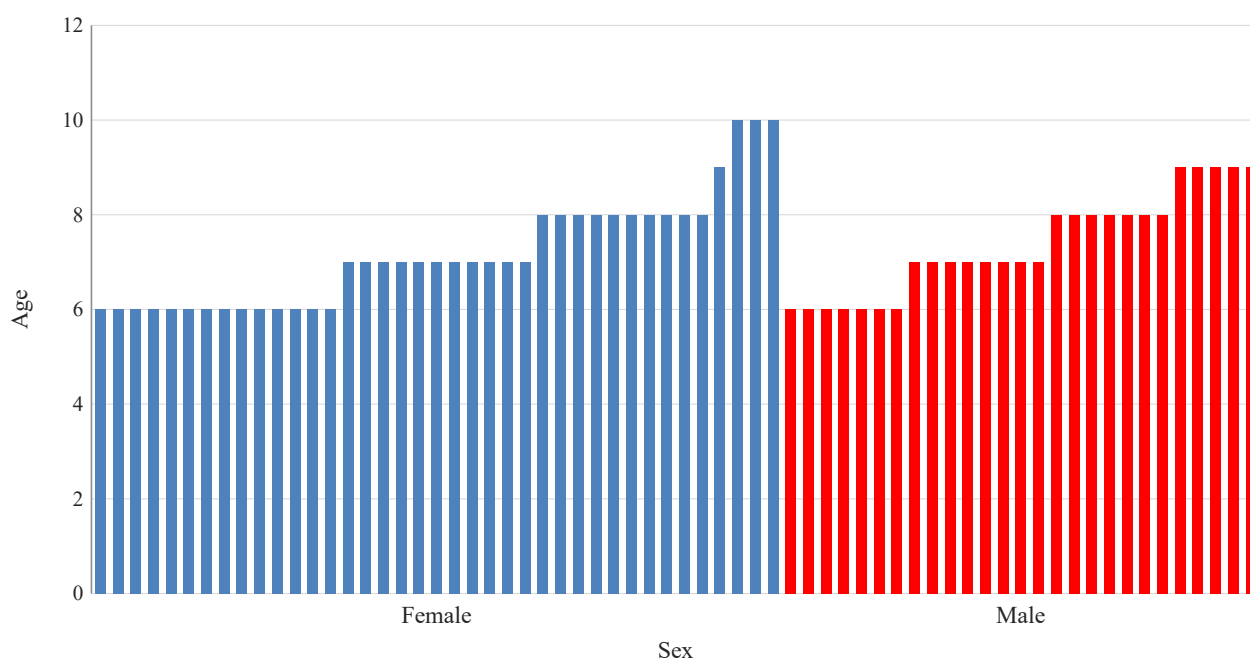


Figure 2 – Profile of students by age and sex (female and male) at the Quilombola Rural School in Lage dos Negros, Campo Formoso, Bahia, Brazil

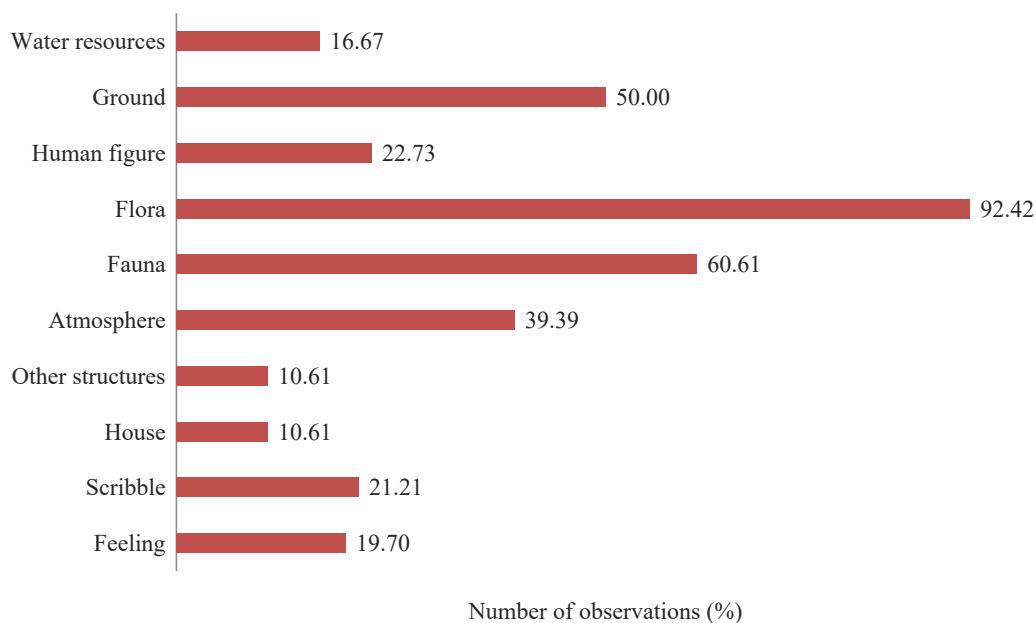


Figure 3 – Percentage of occurrence of observed elements, regardless of sex, in drawings by children from the Quilombola Rural School in Lage dos Negros, Campo Formoso, Bahia, Brazil

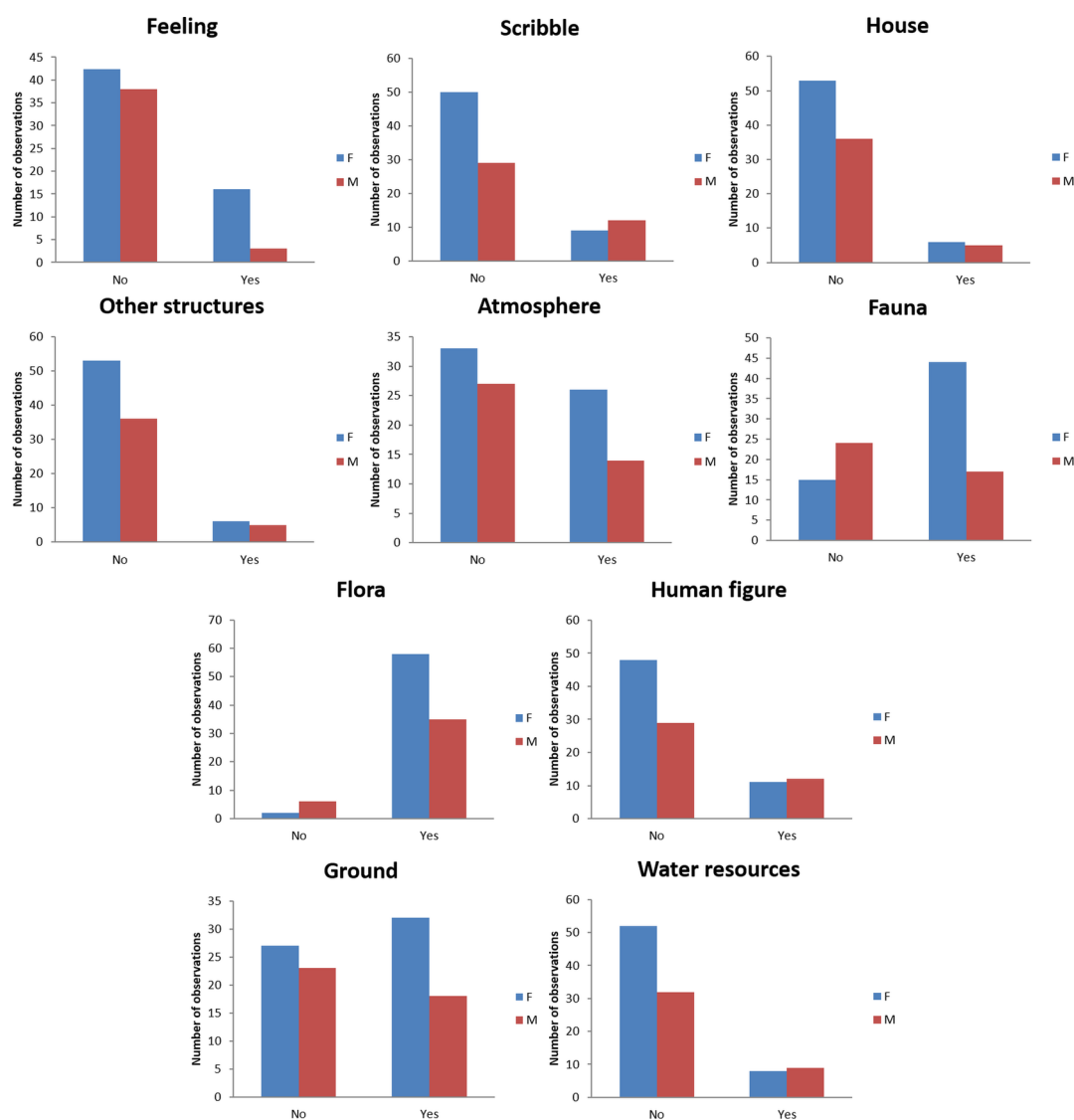


Figure 4 – Comparison between females (F) and males (M) regarding the elements analyzed in drawings by children from the Quilombola Rural School in Lage dos Negros, Campo Formoso, Bahia, Brazil

Conclusion

The environmental perception of children from the *quilombola* community centers on the living elements of nature—with flora and fauna predominating in their graphic representations—while abiotic and anthropogenic components appear less frequently. It is worth noting that these less represented categories correspond to those with the lowest level of agreement among evaluators; consequently, inferences associated with them should be treated with due caution, whereas the core findings regarding flora and fauna are based on a categorization showing near-perfect agreement.

This pattern suggests that children's understanding of the environment prioritizes the more visible and biologically striking aspects of the landscape.

Differences between boys and girls indicate the influence of socio-cultural factors—such as age and sex (female and male)—on perceptions and representations of the environment. The presence of affective elements in the drawings demonstrates that children's environmental perception involves symbolic and emotional dimensions, extending beyond the mere objective identification of natural elements.

Empirical evidence regarding children's environmental perception within the *quilombola* context of the Brazilian semi-arid region remains underexplored in the literature. These representations reflect daily experiences, cultural references, and local modes of interacting with the Caatinga environment, contributing to an understanding of the relationships among childhood, territory, and the construction of environmental meanings in traditional communities within protected areas.

The limited presence of abiotic and anthropogenic elements underscores the need for educational strategies that broaden understanding of the environment as an integrated system. In this regard, EE initiatives can benefit from valuing traditional *quilombola* knowl-

edge and employing participatory and expressive methodologies, thereby fostering contextualized, culturally meaningful educational processes within protected areas of the semiarid region.

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