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Environmental educational practices in native biodiversity: report of an experience with a public school in an area of socio-environmental vulnerability in São Paulo, SP

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ABSTRACT
The article proposes to report on the development and discuss the results of a university extension project carried out among undergraduate and graduate students in Architecture and Urbanism and students from the 2nd stage of basic education in a public school on the outskirts of São Paulo city. The project aimed at sharing knowledge and practices regarding urban afforestation, tree species, and native birdlife. The initiative is justified by the understanding that planning and actions focused on sustainable urban design benefit from the participation of populations, while also revaluing ecosystems and integrating them into society has a real impact on local life, strengthening the sense of recognition and potentially providing lasting economic and environmental benefits. The activities involved literature review on native bird and tree species, holding discussion meetings with the school community, giving lectures on Brazilian flora and the animals attracted to them, and planting seedlings of native trees in the school's open area to start a garden. As a result of the project, based on the identified challenges, it is argued that environmental education practices involving the school community, related to the afforestation of native species, can be understood as: (I) a strategy for counter-colonization of knowledge; (II) a possibility for exploring multisensorial experiences; (III) a gesture of intergenerational and planetary responsibility; and (IV) the building of alliances and practicing the common.

KEYWORDS: Environmental Education. Urban Afforestation. Native Biodiversity.

1 INTRODUCTION

In times of climate change, it is necessary to reflect on the link between humans and nature, seeking to strengthen the systemic understanding of life on Earth and the recognition of humanity as an agent of imbalance in the relationships between species. In other words, recognizing that the impact of human activities in the Anthropocene (Crutzen and Stoermer, 2000) puts human societies and the existence of other beings on the planet at risk (UN-Habitat, 2022). Education and the training of new generations are promising ways of transforming the course of the relationship between man and the environment, working towards the emergence and establishment of thoughts and actions that produce less impact.

The role of environmental education is strategic if we consider urban populations, which are responsible for 70% of global carbon emissions (Crippa *et al.*, 2021). The responsibility of cities in relation to climate change tends to increase with the continuous increase in the percentage of the planet's urban population, which, according to the UN, will rise from 56% to 68% by 2050 (UN-Habitat, 2022). In turn, the fastest growing type of human settlement in the world is the slum (Davies, 2006). The human concentration in slums places large population groups in vulnerable conditions: with a low capacity to resist the effects of climate change, this population is subject to damage and has fewer resources to adapt to and defend itself against extreme events, compared to social classes with greater economic power (IPCC, 2022).

According to data from WWF-Brazil, “humanity today needs 1.5 planets to maintain its consumption pattern, thus putting planetary biocapacity at great risk” (Becker *et al.*, 2012, p. 50). According to a UN report, due to the disproportion between greenhouse gas emissions and biocapacity (understood as nature's ability to recover by absorbing and retaining the carbon released into the atmosphere), a major extinction will probably sweep away the world's biodiversity. This extinction is related to the disconnection of human activity from its natural environment (UN-Habitat, 2022). Urban lifestyles, by promoting an increasingly artificial life, desensitize people to environmental issues. Thinking about strategies to reconnect city dwellers with nature has become a theme that could lead to new experiences, as yet unexplored, in the field of urbanism.

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Planning and actions aimed at sustainable urban design benefit from people's participation. Revaluing ecosystems and integrating them into society has a real impact on local life, strengthening the sense of recognition, reinforcing the construction of a landscape that takes advantage of natural elements (rather than eliminating them), and can provide lasting economic and environmental benefits. In addition, urban occupations that are more integrated with ecosystems have the capacity to make the necessary adjustments to accommodate local species. Valuing native species that are suited to local environmental balance processes and involving the community in the preservation of biodiversity are points to be worked on with the younger generations, which could help build an urban environment that is more favorable to life in cities.

The environmental education actions described in this article were implemented through an extension project carried out as part of a Postgraduate Program in Architecture and Urbanism, with primary school students from a public school in an area of socio-environmental vulnerability. The project sought to investigate native tree species, their characteristics and advantages for urban afforestation, and to replicate this knowledge with a partner public school by giving lectures on Brazilian flora and the animals they attract, followed by planting native tree seedlings in the school's open area to start a garden.

2 OBJECTIVES

This article aims to report on and discuss the results of the activities carried out as part of the Social Insertion Project “Environmental educational practices at the P.M. Soldado Eder State School, in the Encosta Norte Housing Complex”, the objectives of which were: (I) to identify the species of native trees that contribute to the production of food for people and animals; (II) to stimulate critical reflection with elementary school students on native vegetation through lectures and contact with seedlings and seeds; (III) to promote actions to improve the open space at the P. M. Soldado Eder Bernardes dos Santos State School, starting the process of implementing a native plant garden; (IV) Mapping the species of birds seen in the surroundings that could frequent the school grounds in the future; (V) Encouraging care for the trees when planting and periodic watering.

3 MATERIALS AND METHODS

3.1 Project Area

The project was carried out at the Soldado P.M. Eder Bernardes dos Santos State School, located in the district of Itaim Paulista, in the far east of the city of São Paulo [figure 1]. It is a full-time school, which covers Elementary School II (6th to 9th grade) and High School. Next door to the school is the Centro de Acolhida Especial para Famílias (Special Reception Center for Families), which shelters families in homeless or vulnerable situations, providing psychosocial assistance, food, clothing, a dormitory and living spaces (São Paulo, 2022).

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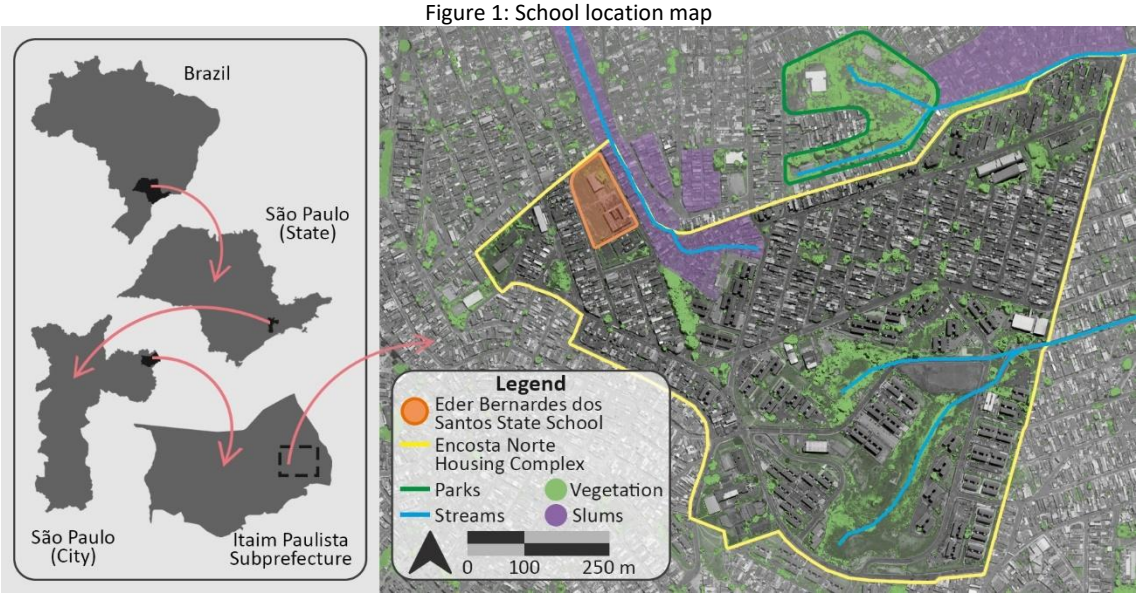
Figure 1: School location map



Source: Authors, 2024, based on Google Earth image (Google, 2023) and data from GeoSampa (São Paulo, [n.d.]).

The school is located on an institutional plot defined in the São Miguel Paulista E Housing Complex, known as Encosta Norte, developed between 1989 and 2009 by the São Paulo State Housing and Urban Development Company (CDHU). The complex covers an area of 53 hectares, occupied by affordable housing, eleven schools, a basic health unit, a social assistance center, an ecopoint and a cultural center. However, initially planned as a green area, the sources of the Tijuco Preto stream are now occupied by the Jagatá favela (Pinheiro, Paula and Imbronito, 2022). Many of the students who attend the Soldado Eder school live in this favela or in low-income housing. Although the area has several urban facilities, social vulnerability ranges from medium to very high (Fundação SEADE, 2013).

With an average population density of between 200 and 350 inhab/ha (IBGE, 2012) and a high degree of soil sealing, the area is afflicted by little urban vegetation, with two major open spaces in the surrounding area. The first one is located near the headwaters of a tributary of the Três Pontes stream, surrounded by social housing blocks. The second area is Santa Amélia Park, located about 500 meters away from the school, which is also home to the headwaters of another tributary of the Três Pontes stream.

3.2 Tree species

For the project, 18 seedlings were set aside from nine different species of trees native to Brazil [table 1], present at least in the Atlantic Forest, which were chosen taking into account their availability, size and flowering and fruiting time.

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Table 1: Characteristics of the trees planted

Popular name (Scientific name)	No. of seedlings	Biomes	Ecological succession	Blossoming / Fruiting — Months J F M A M J J A S O N D
Wild-sugar-apple[1] (*Annona mucosa*)	1	Atlantic Rainforest, Amazon rainforest, Cerrado	Secondary	
Cashew-tree (*Anacardium occidentale*)	1	Atlantic Rainforest, Amazon rainforest, Caatinga, Cerrado, Pampa, Pantanal	Pioneer	
Saba-nut[2] (*Pachira glabra*)	5	Atlantic Rainforest	Secondary	
Cherry-of-the-rio-grande (*Eugenia involucrata*)	2	Atlantic Rainforest	Secondary	
White-trumpet-tree[3] (*Tabebuia roseoalba*)	2	Atlantic Rainforest, Caatinga, Cerrado,	Secondary	
West-indian-locust[4] (*Hymenaea courbaril*)	1	Atlantic Rainforest, Amazon rainforest, Caatinga, Cerrado, Pantanal	Secondary or climax	
White-tamarind (*Senegalya polyphylla*)	3	Atlantic Rainforest, Amazon, Cerrado, Caatinga	Pioneer, secondary or climax	
Surinam-cherry (*Eugenia uniflora*)	2	Atlantic Rainforest, Pampas	Secondary or climax	
False-brazilwood[5] (*Caesalpinia pluviosa*)	1	Atlantic Rainforest	Secondary	

Fonte: Autores, 2024, baseado em Carvalho (2003, 2006, 2008, 2014); Lohmann (2020); Lorenzi (1992, 1998); Mendes-Silva *et al.* (2020); Pinto, Tozzi e Mansano (2020); Prochnow (2007); Silva-Luz *et al.* (2020).

3.3 Stages

The project was implemented between September and December 2023, based on activities organized into three stages: (I) planning; (II) implementation; and (III) conservation and evaluation. The first stage consisted of a bibliographical survey of tree species and native birdlife and the preparation of proposals for planting locations. Also during this stage, there were five virtual meetings, each lasting two hours, three of them involving only the students and the teacher responsible for the project, and two including the science teacher from the partner school. The aim of the meetings was to discuss the project strategies and the choice of species. The second stage involved lectures lasting approximately 30 minutes with four 6th grade classes, each with 30 students, followed by the planting of 18 seedlings in the school's open spaces. Finally, the last stage involved a visit to the school, the week after the planting, to record the state of the seedlings; to collect the school community's thoughts on the project; and a virtual meeting, involving only the researchers, to evaluate the results.

[1] *Annona mucosa* is also known in English as Wild-sweetsop, Lemon-meringue-pie-fruit, Sugar-apple, and Biribá.
[2] *Pachira glabra* is also known in English as Money-tree, Lucky-tree, French-peanut, and Guinea-peanut.
[3] *Tabebuia roseoalba* is also known in English as White-ipe-tree.
[4] *Hymenaea courbaril* is also known in English as Brazilian-copal, Kerosene-tree, and Stinking-toe.
[5] *Caesalpinia pluviosa* is also known in English as Partridgewood.

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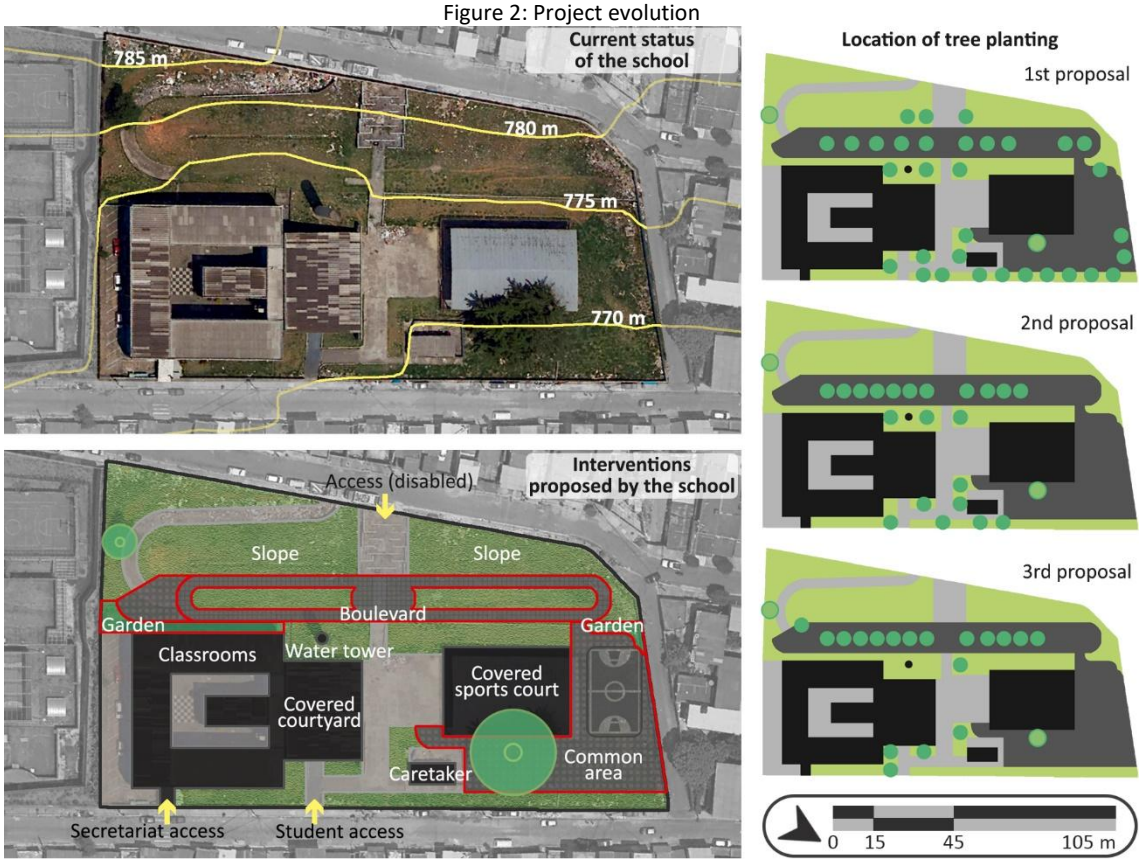
4 RESULTS

4.1 Planning

The location of the tree seedlings took into account the project [figure 2] drawn up by the school's teachers and staff, which proposes the activation of open spaces by introducing new uses such as a vegetable garden, playground and outdoor sports court.

Figure 2: Project evolution



Source: Authors, 2024, based on Google Earth image (Google, 2023) and data from GeoSampa (São Paulo, [n.d.]).

Based on a preliminary drawing provided by the school, the first proposal located the saplings on a plateau near the 775-meter level, in order to qualify the future boulevard. For the lower area, near elevation 770 meters, it was proposed to plant saplings at the interface between the school and the sidewalk, with the expectation of both qualifying the meeting of the living area with the boundary walls and shading the sidewalk on the adjoining sidewalks, based on the projection of the tree tops outside the lot. Planting was also planned at the access to the covered patio, where the students enter, and on the transversal axis of the plot, between the patio and the covered court.

After the initial proposal was presented to the school's science teacher, three problems were identified in the project: (I) less time and fewer students and student-monitors than necessary to plant the planned seedlings; (II) some planting areas are not very frequented by the students at the moment, which could compromise the care of the seedlings in the short term; and (III) the number of seedlings available to the team was less than what was included in

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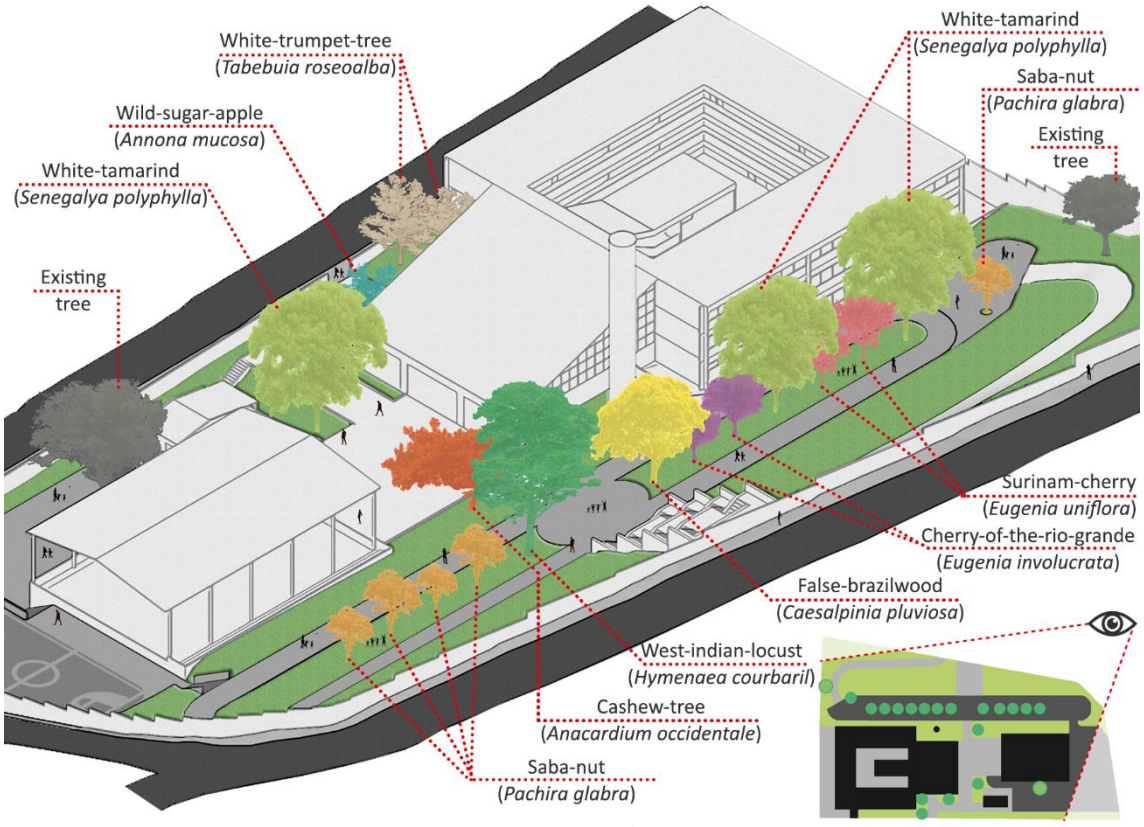
the project. For this reason, a second proposal was drawn up which reduced the total number from 32 to 21 trees, to be planted in the boulevard and near the student entrance, where the students circulate most frequently, making it easier to care for the saplings. This proposal was presented to the school teacher and taken to the planting stage.

On the day of the activities at the school, the project participants were informed that a ramp would be built near the student entrance to facilitate access for people with reduced mobility, requiring modifications that led to the third and final planting proposal [figure 3]. The three saplings that were planned to be planted at the entrance were removed from the project. The saplings near the water tower were relocated to the boulevard in order to facilitate access for planting and conservation. These changes resulted in a total of 18 seedlings being planted.

Figure 3: Final location of the trees planted at the school



Source: Authors, 2024.

The final choice of location for the tree species was motivated by their characteristics. Species with a strong ornamental appeal, such as the White-trumpet-tree (*Tabeluia roseoalba*) and the Wild-sugar-apple (*Annona mucosa*), were placed at the entrance; larger species, such as the White-tamarind (*Senegalya polyphylla*), the West-indian-locust (*Hymenaea courbaril*) and the False-brazilwood (*Caesalpinia pluviosa*), were planted to mark out the transversal axis of the plot and the avenue, and to filter the sunlight that reaches the classrooms; finally, species of high tasting interest, such as the Cashew-tree (*Anacardium occidentale*), the Saba-nut (*Pachira glabra*), the Cherry-of-the-rio-grande (*Eugenia involucrata*), and the Surinam-cherry (*Eugenia uniflora*), were planted near the boulevard.

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4.2 Application

The implementation stage of the project at the school was divided into two activities carried out on the same day. The first included lectures to publicize the species and discuss the importance of native trees for the community. The second activity consisted of planting seedlings in an open area within the school, with the aim of transforming the space in the long term and perpetuating knowledge about trees in the school community. The project was carried out in four 6th grade classes, with around 30 students each, with an average age of 11. Four postgraduate students, one undergraduate student, the teacher in charge of the project, the school science teacher and two external guests took part in the implementation stage. While one postgraduate and one external guest were responsible for the lectures, another three postgraduates, one undergraduate and one external guest acted as monitors at the planting stage, dividing each class into four or five groups of between six and eight students each, responsible for planting a seedling. The teacher in charge of the project and the school's science teacher acted as supervisors, moving between activities and groups. In order to optimize time, the two activities took place simultaneously in different classes, i.e. as soon as the lecture with one class was finished, the same class was led to the planting at the same time as the lecture with the next class.

4.2.1 Seminar

Each lecture lasted approximately 30 minutes. They took place in classrooms with monitors that allowed slides to be shown [figure 4].

Figure 4: Presentation of the project to teachers (left) and lectures to students (right)

Source: Authors, 2023

The planting project was presented to the students, showing a drawing of the proposed location of the tree seedlings in the school. Slides were then shown containing information and photos with the characteristics of the plant species, such as popular name, scientific name, occurrence, characteristics of the trunk, crown, fruit, height and lighting conditions. As the trees were displayed, the students were shown some seeds and fruit, which they were able to feel in terms of texture, shape, color and smell.

Complementing the display of the individual characteristics of the tree species, the students worked on the overall perspective, highlighting the relationship between the species

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as well as between the landscape and humans. They were shown a scale drawing of all the mature trees next to human figures, giving the idea of proportion. Graphs were also shown containing all the species studied with their respective flowering and fruiting times, explaining that one of the criteria for choosing the species was that, at any time of the year, there should always be a tree with fruit and/or flowers.

This exhibition resulted in many questions and reactions. Some students were impressed by the size of a person in relation to a larger tree, such as the West-indian-locust (*Hymenaea courbaril*), a species that also generated curiosity and comments when it was explained that its fruit is nicknamed “sniffling fruit” due to the strong smell of the pulp. Others were impressed by the height of an adult Saba-nut (*Pachira glabra*), because it is so small. Many students were also unaware of the fact that the fruit of the Cashew-tree (*Anacardium occidentale*) is actually the nut, while what is popularly believed to be the fruit is the flower stalk.

As well as expressing curiosity, the students also shared personal stories. One of them commented that in his grandmother's house there was a tree that resembled the photo shown of the False-brazilwood (*Caesalpinia pluviosa*), and he felt a sense of nostalgia and a desire to get involved, particularly in caring for the seedling of this species.

Interest in the tree species varied between the classes, with some more interested in ornamental species and others in species that bear edible fruit. However, all the classes were excited about the idea of having a garden at school with flowers and fruit all year round.

Next, the topic of local avifauna was addressed, presenting birds that had been sighted in parks located in the districts of the Itaim Paulista Subprefecture, according to the publication “Aves da Cidade de São Paulo” (Birds of the City of São Paulo) (São Paulo, 2012), and which could be attracted by the new vegetation. Of the 97 bird species in the publication, we selected those that met the following criteria: (I) They had been sighted in at least two of the five parks located in the districts of the Itaim Paulista Subprefecture; (II) Their habitat was woodland (low or medium mass trees) and/or field; (III) Their diet was grains, fruit, nectar and/or insects; (IV) They were not exotic or migratory; and (V) They had a diurnal habit. In the end, 16 species of birds were discussed with the students: Squirrel-cuckoo (*Piaya cayana*), Blue-and-white-swallow (*Pygochelidon cyanoleuca*), Swallow-tailed-hummingbird (*Eupetomena macroura),* Great-kiskadee (*Pitangus sulphuratus*), Bananaquit (*Coereba flaveola*), Southern-house-wren (*Troglodytes musculus*), Common-tody-flycatcher (*Todirostrum cinereum*), Yellow-bellied-elaenia (*Elaenia flavogaster*), Plain-parakeet (*Brotogeris tirica*), Blond-crested-woodpecker (*Celeus flavescens*), Ruddy-ground-dove (*Columbina talpacoti*), chalk-browed-mockingbird (*Mimus saturninus*), e Rufous-bellied-thrush (*Turdus rufiventris*), Orange-headed-tanager (*Thlypopsis sordida*), Sayaca-tanager (*Thraupis sayaca*) and Palm-tanager (*Thraupis palmarum*). The students were introduced to information about the birds' diet, habitat, occurrence, size, time period and behavior.

During this stage of the seminar, different comments emerged. One of the students reported that he knew one of the birds presented, saying that whenever he walked to the school where he used to study, he would spot the Common-tody-flycatcher (*Todirostrum cinereum*), sharing with his classmates his curiosity about the bird's song, which is reminiscent of the sound made when winding a clock. Another student commented that he thought he had seen a Bananaquit (*Coereba flaveola*) nest in a tree near his house. A third classmate was impressed by

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the length of the Squirrel-cuckoo (*Piaya cayana*), which can reach 44 centimeters. But the biggest interest in the birds was whether they would visit the school if they took care of the seedlings and they thrived. Many students were unaware of the species of birds presented and almost all of them didn't know that they lived in parks near the school, broadening their knowledge of the area.

Finally, the students were instructed on how to plant and water the seedlings. In one of the classes, a student was particularly interested, asking questions about the interval between waterings and the appropriate amount of water, reproducing the infographic with the procedure in his notebook and writing down comments for each step.

Once the exhibition was over, the students were organized into smaller groups. As the final proposal was to plant 18 saplings, the distribution was not uniform, with two classes being divided into five groups of six students each (totaling ten groups) and another two classes into four groups of between seven and eight students each (totaling eight groups). A certificate was also given to each group, with the name of the tree and the students responsible, who were called guardians, and a printed copy of the presentation to be deposited in the school library, which could subsidize future classes and the conservation of the seedlings.

4.2.2 Planting

As soon as the lecture was over, the class was taken to the school's outdoor area for the planting [figure 5], which followed the methodology presented in a booklet developed by the São José de Rio Preto City Hall ([s.d.]). The first step consisted of preparing the holes and was carried out in advance by school staff. As there were changes in the location of some seedlings, the postgraduates made the missing holes while the seminar with the first class was taking place.

Figure 5: Groups making the hole (left), the planting (center) and the tutor (right)

Source: Authors, 2023

The next steps were to prepare and plant the seedlings. The students were instructed to handle them carefully so as not to wear down the clod of earth that housed the roots, thus helping the seedling adapt to its new environment. The hole was then finished. The fifth stage consisted of installing the guardians, which were made from reused wooden planks. The seedlings were tied to the guardian and protected with a malleable screen. Finally, the students

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watered the seedlings for the first time. The planting took place in October, during the rainy season, which favors the development of the seedlings.

4.3 Conservation and Evaluation

On subsequent days, the students watered the seedlings [figure 6]. During a visit the week after the planting, the state of conservation of the seedlings was recorded. The students remained committed to looking after the new garden. Finally, the school's science teacher, who acted as the project's coordinator with the community, was asked to give his thoughts on the activities carried out [table 2].

Figure 6: Students watering the seedlings

Source: School archives, 2023

Table 2: Evaluation of the actions by the science teacher at the partner school

Stage	Highlights
Planning	● "[The discussion and adaptation of the landscaping project] was carried out according to the school's physical space, with the priority planting of trees that produce flowers in front of the school, in order to make the school's façade more beautiful."
Lecture	● "With regard to the presentation of the content to the students, it was very didactic, counting on their participation, making good use of the visual resource to present the trees."
Planting	● "[In terms of resources], there was all the necessary equipment." ● "[Regarding student involvement], there was the strategy of instigating their curiosity about which trees would be planted [and] none of the school's students were dispersed."
Conservation	● "90% of the students got involved, as there are those who are no longer interested throughout the school year." ● "[The] teachers were responsible for watering the plants during the week." ● "There was an exchange of ideas about the activities with the students, who talked about the importance of the project in the future. The group of science teachers was involved in the follow-up after the planting."
Overall evaluation	● "[The partnership between the university and the school was] positive, with an exchange of experiences between both parties, in terms of teaching and the rapport between students." ● "The students started to take more care of the school environment." ● "[The] project was very good, with total dedication on both sides, always aiming for the student's knowledge, and may continue with new projects in 2024."

Source: Authors, 2024

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5 DISCUSSIONS

The project prompted reflection on at least four themes: countercoloniality of knowledge; multisensory aesthetic experience; ethics of alterity and responsibility; and building alliances and practicing the common. Each of them is discussed below.

5.1 Countercoloniality of knowledge

The project was an opportunity to broaden the school community's repertoire in relation to tree biodiversity and Brazilian birdlife. During the seminar stage, at first, still uninterested in the native species that would be planted, the students limited themselves to asking questions about widely known exotic fruits (and pseudo-fruits), such as lemons (*Citrus limon*) and apples (*Malus domestica*). These are varieties that are not only present on supermarket shelves, but also represented in media productions that are more widely accessible and consumed, such as films of foreign origin.

A mixture of attraction and aversion to the species native to Brazil took hold of the students as they were introduced to the shapes, textures and flavors of its fruits, adapted to the tropical environment, which, among other characteristics, have a more viscous pulp, larger seeds, and are foreign to the palate accustomed to consuming exotic fruits, which have been the object of decades of agricultural intervention in order to make them more marketable and profitable. Thus, not only the imaginary, but also the students' own sensoriality and sensitivity were problematized by the project.

The gap in the repertoire about Brazilian biodiversity is also reinforced by the incipient access to pedagogical content about native species and the lack of encouragement and training for teachers to conduct classes on the subject. Almeida, Landinho and Franzolin (2022), in a study on how biodiversity is presented in textbooks, identified a greater preference for dealing with non-native species, which have greater aesthetic appeal and are closer to the anthropic environment, as well as favoring a utilitarian view of nature.

Far from being a phenomenon confined to schools, the devaluation and lack of knowledge about native biodiversity finds parallels in other geographies and social groups. Silva *et al.* (2019), when collecting reports from family farmers in Paraná, linked to the Peasant Struggle, highlight the association made by one of the interviewees in relation to gabiroba (*Campomanesia xanthocarpa*), a fruit native to the region, in which he classifies it as “pig food”. For the authors, this is not a singular report, but a shared idea that “eating native fruits is synonymous with backwardness” (Silva *et al.*, 2019, p. 116).

The greater prestige of exotic species over native species in the social imaginary is representative of the existence of a coloniality of knowledge, because, according to Quijano (2009, p. 112), “throughout the Eurocentric world, the hegemony of the Eurocentric way of perceiving and producing knowledge has been imposed, and in a very large part of the world's population, the imaginary itself has been demonstrably colonized”. This idea extends to the memory of national biodiversity. In a complementary way, Santos (2007) speaks of an abyssal thinking that is confused with modern Western thinking itself, which hierarchically organized

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social reality between “this side of the line” (Eurocentric reason) and the “other side of the line” (epistemological plurality). According to Santos (2007, p. 71):

> The division is such that “the other side of the line” disappears as reality, becomes non-existent and is even produced as non-existent. Non-existence means not existing in any relevant or comprehensible way. Everything that is produced as non-existent is radically excluded because it remains outside the universe that the very concept of inclusion considers to be the “other”. The fundamental characteristic of abyssal thinking is the impossibility of the co-presence of the two sides of the line.
> [Free translation][6]

Typical of abyssal thinking, which makes invisible what is not “on this side of the line”, is the monoculture of knowledge, which “consists of the transformation of modern science and high culture into unique criteria of truth and aesthetic quality, respectively” (Santos, 2002, p. 247). This division results in epistemic domination and dependence and, in the worst-case scenario, epistemicide, i.e. the erasure of a people's knowledge and techniques. Faced with this risk, there is an urgent need to oppose a counter-coloniality to the coloniality of knowledge, an ecology of knowledge to monoculture. This ecology, argues Santos (2002, p. 250), involves “identifying other knowledge and other criteria of rigor that operate credibly in social contexts and practices declared non-existent by metonymic reason”. In the context of the project, it is not only a question of disseminating knowledge about native species, but above all of listening actively to the students' memories and experiences.

5.2 Multisensory aesthetic experience

Eurocentric thinking has not only imposed a monoculture of knowledge, but also of sensitivity, eclipsing the power of multisensoriality, understood as “the recognition of a phenomenon and its conceptual construction through different body sensors” (Rossi, 2015, p. 77).

Perceiving the landscape not just through the eyes, but with all the senses, was an interest of the project. The students were invited to reflect on the plasticity of the trees, both as parts and as a whole, in their diversity of colors and shapes. But also about the perfume of the flowers, the taste of the fruit, the texture of the trunks, the temperature of the environment under the canopies, the sound of the birdsong attracted by the new garden.

Although all the senses are of equal interest for another aesthetic experience, one in particular was the object not only of reflection, but of practical action by the project. This is the sense of touch, which is most directly opposed to the optical experience, because, as Kastrup (2015, p. 73) states, “while vision gives rise to a distal and global perception, touch provides knowledge in parts and less structured”. This experience, which is characteristic of touch but not limited to it, is called haptic perception. It occurs through proximity, through successive and non-globalizing discovery of the world, through an active relationship between the self and the

[6] Original text: A divisão é tal que "o outro lado da linha" desaparece como realidade, torna-se inexistente e é mesmo produzido como inexistente. Inexistência significa não existir sob qualquer modo de ser relevante ou compreensível. Tudo aquilo que é produzido como inexistente é excluído de forma radical porque permanece exterior ao universo que a própria concepção de inclusão considera como o "outro". A característica fundamental do pensamento abissal é a impossibilidade da co-presença dos dois lados da linha.

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other. In this sense, Kastrup (2015, p. 74) corroborates, “more than a sense of contact, touch is a sense of presence, leading to the experience of encounter. Not only do we perceive that the object has a certain shape, but we feel that it is there.”

Haptic perception, mediated by touch, is the aesthetic experience that can most favorably bring out new ways of affecting and being affected by nature. The power of the tactile sense was explored by the project at every stage of its implementation. During the lecture, fruit and seeds from the species were distributed among the students, who were able to feel the shape, texture, size, temperature and vibration of these other entities with their hands, skin and muscles. In the next stage, they didn't just watch the postgraduates plant, they were provoked into action, into interaction, which, as inter-action, is always collective action, the self and the other. With their touch, they felt the earth, they felt the seedlings, not just their texture and temperature, but their presence and fragility.

5.3 Ethics of otherness and responsibility (intergenerational and planetary)

The students were warned that the time it takes for the trees to mature will not be limited to the school year, and for many species it will extend beyond their time at the school. Even though the students, who are in the 6th year of elementary school, will be able to follow the development of the saplings for at least 7 years, until they graduate in the 3rd year of secondary school, some species may not have reached maturity yet. What does it mean to be responsible for something that you may not be able to enjoy because of a promise? Under these conditions, what motivates action? The questions provided an opportunity to reflect with the students on the nature of the ethics of otherness and intergenerational and planetary responsibility, i.e. having to respond to future generations, but also to the non-human, to the species of animals, plants, fungi and other living beings that inhabit the planet, and to the non-living, such as rivers and mountains.

According to Lévinas (1980), responsibility towards the Other, the central foundation of ethics, is always an asymmetrical relationship, in which reciprocity cannot be expected, and is therefore unconditional. “The subject [...] is responsibility before being intentionality,” says Lévinas (1993, p. 81). In the ethics of alterity, the relationship with the Other is prior to subjectivity, since “I exist through the other and for the other” (Palumbo, Rosa and Wermuth, 2023, p. 7). Also, for Lévinas, prior to reason, to calculation, is sensitivity, “an ‘I’ that does not have its way of existing solely based on the immanent sphere of consciousness, but rather perceives itself as being an ‘I’ together with the world, an embodied ‘I’, an ‘I’ in ‘situation’” (Bragagnolo, 2015, p. 9). Sensitivity before reason as a foundation, because ethics is made in exposure to the other, “the sensitive relationship of one receiving the other” (Sales, 2005, p. 115). It is in sensitivity, in coming into contact with the vulnerability of the Other, that we are summoned to responsibility, that is, to a “non-violent response to the call of the other” (Fonseca, 2012, p. 174). The Levinasian ethics of alterity, based on a relationship of gratuitousness and which emerges as an original condition from exposure to the vulnerability of the Other, is also echoed by Jonas (2006, p. 159-60), who says: “alterity takes possession of my responsibility, and here no appropriation is intended [...]. Perceived in its fleetingness, precariousness, insecurity, it has the power to move me by its sheer existence, placing my person at its disposal”.

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It is argued that another ethic, such as that of alterity, is fundamental for transforming the link between humans and nature, characterized in hegemonic Western thought by the objectification of the latter by the former. Even though we discussed with the students the various benefits they could enjoy from the implementation of a garden at school, such as the visual, olfactory and gustatory quality added by the flowers and fruit, we encouraged them to have a different relationship with biodiversity, one that wasn't conditioned, being above and beyond the benefits, a relationship that was first established as an ethical one. Although the relationship between the Self and the Other cannot be captured in the form of representation, certificates linking the names of the students involved in the planting and the species of the trees were used as a pedagogical resource, a fuse and not a limit to thought, a symbolic inscription for the emergence of something that is no longer the self or the other, but a third party, a pure bond, such as Maria-False-brazilwood, João-Surinam-cherry, Laís-White-tamarind.

But if a project to plant native species is an invitation to take responsibility for future generations, it is also an opportunity to pass on the knowledge of past generations, to preserve biocultural memory, understood as "the expression of the articulation and amalgamation of the diversity of human and non-human life [...], in the strict sense, the memory of the species" (Toledo and Barrera-Bassols, 2015, p. 40). Preserving biocultural memory, particularly with regard to biodiversity, is a challenge. Matos *et al.* (2021), based on interviews with individuals aged between 13 and 49, found that older people have more knowledge about native species than younger people, acquired, the authors note, from the stories of their ancestors.

In this way, the intervention made by one of the students when he was (re)introduced to one of the project's species was identified as positive. The student shared that at his grandmother's house there was a False-brazilwood (*Caesalpinia pluviosa*), and she imparted knowledge about the flowering season—acquired through observation and experience. This account is seen as an example of the opportunity to build bridges between academic knowledge and popular knowledge, between the past and the present, keeping alive the cultural link that connects generations.

5.4 Sharing, collaborating, building alliances, practicing common ground

Responsibility, as discussed, emerges as a response to neoliberal rationality, centered on the individual as the cause and purpose of action, reducing responsibility to "the requirement to become an entrepreneur of oneself" (Butler, 2018, p. 22). At the same time as this moral idea encourages investment in self-sufficiency, the public institutions and social rights inspired, above all, by the Welfare State project have suffered successive dismantling, leading to a double: on the one hand, pressure (on psychic and social levels) for self-sufficiency and, on the other, the unfeasibility of its conditions on an economic, and therefore collective, level (Butler, 2018). Thus, the more someone seeks responsibility for themselves, Butler (2018, p. 21) argues, "the more socially isolated they become and the more precarious they feel". This induced precarity differs from the precariousness that constitutes existence (Butler, 2015) and calls for responsibility towards the Other (Lévinas, 1980), as it "implies an increased sense of being disposable or discarded that is not distributed equally in society" (Butler, 2018, p. 21).

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The prospect of differential exposure to precariousness makes the participation of the school community in the development and implementation of the project all the more essential, because if the geographical context in which the school is located and where a large proportion of its students live is marked by socio-environmental vulnerability, it is also the same community that has a privileged place in shared responsibility. As Young argues[7] (2005, p. 113 *apud* Pinto, 2014, p. 100), "their social positions [...] offer victims of injustice a unique understanding of the nature of the problems and the likely effects of policies and actions proposed by others who are situated in more powerful and privileged positions."

Against an individualizing ethic, Butler (2018) proposes the construction of alliances between heterogeneous groups and actors, motivated by common goals, brought together in a performativity that goes beyond discourse to achieve corporeality, realizing itself as action in concrete space. Thus, within the framework of the project, alliances were made. Students and teachers with different perspectives and experiences came together in a common action. Undergraduates and postgraduates from distant places with no connection to the school established bonds of solidarity with the community. Individuals from the same group, whose relationship is not always friendly, were able to collaborate and share the same goal, as reported by the school's science teacher, who highlights the engagement of students with different levels of emotional closeness during the planting, as well as the involvement of teachers from different disciplines in the conservation of the seedlings. This alliance-building is not limited to the time the project is implemented, as the students share their planting experience with their parents, siblings and grandparents, encouraging future partnerships.

Making alliances is, above all, weaving bonds, using the prefix "co" in its maximum affirmation. (Co)working and (co)sharing, as a bond with others, "would thus represent a possibility of moving away from what I already have as truths in my already consolidated world" (Guatelli, 2018, p. 2). However, alliances, when authentic, do not hide tensions, but make them a condition for the emergence of other, more plural worlds, a line of escape from a reality dominated by monocultures - of knowledge, experience, time and more. In this sense, Guatelli (2018, p. 2) argues:

> It's not a perfect junction, where the differences would cancel each other out or be erased, but rather where friction would emerge. This "co" together with these frictions indicates the possibility of construction. It's not just about validation, it's not just about confirming or abandoning my world in favor of another world, but it's precisely from the work, the friction, this problematic junction, that perhaps a third, a fourth or countless other possibilities can emerge. [Free translation][8]

The possibility of building other worlds is only possible because the school is not an inert space, but a used territory, made up of "objects and actions, synonymous with human space, inhabited space" (Santos, 1994, p. 16). More than that, the school is "territory being

[7] For the original work, see YOUNG, I. M. **On female body experience:** "Throwing Life a Girl" and Other Essays. Oxford: Oxford University Press, 2005

[8] Original text: Não é uma junção perfeita, onde as diferenças se anulariam ou apagariam, mas onde, justamente, os atritos aflorariam. Esse "co" junto com esses atritos indica a possibilidade da construção. Não se trata apenas de validação, não é só a confirmação ou o abandono do meu mundo em prol de outro mundo, mas é precisamente a partir do trabalho, do atrito, dessa junção problemática, que talvez possam emergir uma terceira, uma quarta, ou outras inúmeras possibilidades.

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used" (Silveira, 2011, p. 81) and is therefore always in process, open to the emergence of new relationships and meanings. The public school, marked by the power of the state (in the form of educational policies, such as standards and curricular bases), based on collective action and shared responsibility, sees the conformation, albeit for a moment, of another type of territoriality, led by the school community and characterized by the practice of the common. Practice, because, as Vieira (2014, p. 97-8) argues, the "commons is not just a set of resources, of things; it is also a social product. [...] It is both a 'noun' (the set of shared goods) and a 'verb' (the action of sharing; commoning, the 'making common')."

6 FINAL CONSIDERATIONS

The work carried out in the context of university extension establishes productive partnerships for all participants. In the field of Architecture and Urbanism, the on-site presence of a team of researchers has the potential not just to collect data, but to build knowledge "with" the territory (and not just "about" the territory), through involvement through doing, in joint practices that include human and non-human, organic and non-organic agents. We are also working from the perspective of transforming the place, raising discussions about the concrete reality and its instruments of intervention.

The activities, aimed at recognizing Brazilian species of fauna and flora and carried out at a public school in an area of socio-environmental vulnerability, have implications for bringing school and nature closer together, with the potential to affect the urban landscape and the perception of the responsibility of social groups for the conservation of local biodiversity. The project has a broad educational dimension, related to the multiplication of perceptions and knowledge shared by the students themselves, who experience the territory on a daily basis. This expanded dimension of the extension action also returns to the group proposing the project, in the possibility of reflecting on the practices and their results, based on the grounded and current debate on the multidimensionality of environmental justice, the countercoloniality of knowledge and the resistance of collective actions articulated in territories that have been configured as a reflection of exogenous exploitative and predatory logics.

Based on an evaluation of the results of the educational activities carried out, it is suggested that the project be continued and expanded along two lines of action. Firstly, it is proposed to strengthen the activities with the partner school by monitoring the growth and conservation of the seedlings, replacing any trees that perish and improving the planting technique and conditions. In this context, it is also intended to deepen reflection with the school's students and teachers on the themes covered by the project, particularly from the perspective of climate change.

As a second line of action, it is suggested that the project be extended to other areas of the territory, benefiting from the significant availability of open spaces provided by the integrated and multifunctional land division designed by CDHU, which has interspersed large unoccupied areas with housing and institutional spaces, preserving the areas adjacent to the hydrography while at the same time making it possible, through a project that has never been developed and applied, to improve the landscaping around the housing complexes. Despite being extensive, these open spaces have vegetation that is essentially made up of anthropogenic

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fields, with little tree planting on the sidewalks and no preserved remnants of the Atlantic Forest. In this sense, we see not only the possibility of applying the extension project to open spaces in other public schools in the area, but also the planting of native tree species in the green areas of the housing estates, in conjunction with the local and school community. It is argued that qualifying these open spaces with vegetation could help mitigate the effects of climate change at a local level, reducing heat islands and increasing water infiltration. Above all, it points to the possibility of creating urban environments that value local aspects in their entirety (the built landscape, social groups and elements of nature), achieving the uniqueness and balance of each place within the framework of a human culture linked to nature, and not the other way around.

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REFERENCES

ALMEIDA, E. A. E. de; LANDINHO, F. M.; FRANZOLIN, F. Biodiversidade em livros didáticos: o que diz a literatura? In: Simpósio PEHCM UFABC, 4., 2022. **Anais** [...]. Santo André: UFABC, 2022. Disponible in: <https://doity.com.br/anais/visimposiopehcmufabc/trabalho/259336>. Access: 01 jun. 2024.

BECKER, M.; MARTINS, T. da S.; CAMPOS, F. de; MORALES, J. C. (Coord.). **Pegada Ecológica de São Paulo:** Estado e Capital e a família de pegadas. Brasília: WWF Brasil, 2012.

BRAGAGNOLO, F. **Da representação à sensibilidade**: um olhar levinasiano sobre a fenomenologia. Dissertação (Mestrado em Filosofia). Centro de Ciências Sociais e Humanas, Universidade Federal de Santa Maria, Rio Grande do Sul, 2015. Disponible in: <http://repositorio.ufsm.br/handle/1/9153>. Access: 04 jun. 2024

BUTLER, J. **Quadros de Guerra:** quando a vida é passível de luto? Rio de Janeiro: Civilização Brasileira, 2015.

BUTLER, J. **Corpos em Aliança e política das ruas:** notas para uma teoria performativa de assembleia. Rio de Janeiro: Civilização Brasileira, 2018.

CARVALHO, P. E. R. **Espécies Arbóreas Brasileiras.** Coleção Espécies Arbóreas Brasileiras, vol. 1. Brasília: Embrapa Informação Tecnológica; Colombo: Embrapa Florestas, 2003.

CARVALHO, P. E. R. **Espécies Arbóreas Brasileiras**. Coleção Espécies Arbóreas Brasileiras, vol. 2. Brasília: Embrapa Informação Tecnológica; Colombo: Embrapa Florestas, 2006.

CARVALHO, P. E. R. **Espécies Arbóreas Brasileiras.** Coleção Espécies Arbóreas Brasileiras, vol. 4. Brasília: Embrapa Informação Tecnológica; Colombo: Embrapa Florestas, 2008.

CARVALHO, P. E. R. **Espécies Arbóreas Brasileiras.** Coleção Espécies Arbóreas Brasileiras, vol. 5. Brasília: Embrapa Informação Tecnológica; Colombo: Embrapa Florestas, 2014.

CRIPPA, M.; GUIZZARDI, D.; PISONI, E.; SOLAZZO, E.; GUION, A.; MUNTEAN, M.; FLORCZYK, A.; SCHIAVINA, M.; MELCHIORRI, M.; HUTFILTER, A.F. Global anthropogenic emissions in urban areas: patterns, trends, and challenge. **Environmental Research Letters**, [s.l.], v. 16, n. 7, e074033, jul. 2021. Disponible in: <https://doi.org/10.1088/1748-9326/ac00e2>. Access: 08 jun. 2024.

CRUTZEN, P. J.; STOERMER, E. F. The "Anthropocene**". Global Change Newsletter**, [s.l.], v. 41, p. 17-18, mai. 2000.

ISSN 2318-8472, v. 12, n. 86, 2024

DAVIS, M. **Planeta Favela**. São Paulo: Boitempo, 2006.

FONSECA, F. O. Hans Jonas: responsabilidade e o afiançamento do futuro. **Publicações Da Escola Superior Da AGU**, EAGU, Brasília, v. 1, n. 17, pp. 169-184, abr. 2012. Disponible in: <https://revistaagu.agu.gov.br/index.php/EAGU/article/view/1614>. Access: 30 mai. 2024.

FUNDAÇÃO SEADE – FUNDAÇÃO SISTEMA ESTADUAL DE ANÁLISE DE DADOS. **Índice Paulista de Vulnerabilidade Social – IPVS 2010**. São Paulo: Fundação SEADE, 2013.

GOOGLE. **Google Earth website.** Versão 10.55.0.1. [s.l.]: Google, 2023. Disponible in: <http://earth.google.com>. Access: 09 jan. 2024.

GUATELLI, I. Co, essa máquina imperfeita. **V!RUS**, São Carlos, n. 17, jul./ dez. 2018. Disponible in: <http://www.nomads.usp.br/virus/virus17/?sec=2&item=1&lang=pt>. Access: 09 jun. 2024.

IBGE - INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA. **Censo Brasileiro de 2010.** Rio de Janeiro: IBGE, 2012.

IPCC - INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE. Summary for Policymakers. In: PÖRTNER, H.-O.; ROBERTS, D. C.; TIGNOR, M.; POLOCZANSKA, E. S.; MINTENBECK, K.; ALEGRÍA, A.; CRAIG, M.; LANGSDORF, S.; LÖSCHKE, S.; MÖLLER, V.; OKEM, A.; RAMA, B. (Org.). **Climate Change 2022**: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge: Cambridge University Press, 2022, pp. 3–33. Disponible in: <https://doi.org/10.1017/9781009325844.001>. Access: 03 jun. 2024.

JONAS, Hans. **O princípio responsabilidade:** ensaio de uma ética para a civilização tecnológica. Rio de Janeiro: Contraponto; Editora PUC-Rio, 2006.

KASTRUP, V. O tátil e o háptico na experiência estética: considerações sobre arte e cegueira. **Revista Trágica:** estudos de filosofia da imanência, Rio de Janeiro, v. 8, n. 3, pp. 69-85, jul./set. 2015. Disponible in: <https://doi.org/10.59488/tragica.v8i3.26831>. Access: 06 jun. 2024

LÉVINAS, E. **Totalidade e Infinito.** Lisboa: Edições 70, 1980.

LÉVINAS, E. **Humanismo do outro homem.** Petrópolis: Vozes, 1993.

LOHMANN, L. G. Tabebuia. In: BFG – BRAZIL FLORA GROUP. **Flora do Brasil 2020.** Rio de Janeiro: Jardim Botânico do Rio de Janeiro, 2020. Disponible in: <https://floradobrasil2020.jbrj.gov.br/FB114338>. Access: 18 out. 2023.

LORENZI, H. **Árvores brasileiras:** manual de identificação e cultivo de plantas arbóreas nativas do Brasil, vol. 1. Nova Odessa: Editora Plantarum, 1992.

LORENZI, H. **Árvores brasileiras:** manual de identificação e cultivo de plantas arbóreas nativas do Brasil, vol. 2. Nova Odessa: Editora Plantarum, 1998.

MATOS, B. F.; SOUSA, J. J. A. DE; FAÇANHA, R. V.; MOURA, F. N. DE S.; HOLANDA, D. X. T. Plantas nativas e a prática da contextualização: uma investigação etnobotânica no ensino de ciências. **Revista Insignare Scientia - RIS**, Chapecó, v.4, n. 6, pp. 1-21, 2021. Disponible in: <https://doi.org/10.36661/2595-4520.2021v4i6.12050>. Access: 18 mai. 2024

MENDES-SILVA, I.; LOPES, J. C.; SILVA, L. V.; OLIVEIRA, M. L. B. Annona. In: BFG – BRAZIL FLORA GROUP. **Flora do Brasil 2020.** Rio de Janeiro: Jardim Botânico do Rio de Janeiro, 2020. Disponible in: <https://floradobrasil2020.jbrj.gov.br/FB110252>. Access: 18 out. 2023.

PALUMBO, L. P.; ROSA, S. F. de; WERMUTH, M. A. D. Alteridade e Responsabilidade ética em Emmanuel Lévinas para a educação inclusiva (ODS-4), **Salão do Conhecimento**, Ijuí, n. 9, nov. 2023. Disponible in: <https://www.publicacoeseventos.unijui.edu.br/index.php/salaoconhecimento/article/view/24311>. Access: 06 jun. 2024.

PINHEIRO, R. de C. N.; PAULA, F. R. F. de; IMBRONITO, M. I. Open Spaces and Transformations in the Territory of the Encosta Norte Housing Complex, East Side of São Paulo. **Revista Nacional De Gerenciamento De Cidades**, ANAP,

ISSN 2318-8472, v. 12, n. 86, 2024

Tupã, v. 10, n.77, pp. 13-25, 2022. Disponible in: <https://doi.org/10.17271/23188472107720223191>. Access: 05 fev. 2024.

PINTO, C. R. J. O conceito de responsabilidade em Iris Young. **Lua Nova**, São Paulo, n. 91, pp. 77-104, 2014. Disponible in: <https://doi.org/10.1590/S0102-64452014000100004>. Access: 17 set. 2023.

PINTO, R. B.; TOZZI, A. M. G. A., MANSANO, V. F. Hymenaea. In: BFG – BRAZIL FLORA GROUP. **Flora do Brasil 2020.** Rio de Janeiro: Jardim Botânico do Rio de Janeiro. Disponível: <https://floradobrasil2020.jbrj.gov.br/FB22972>. Access: 18 out. 2023.

PROCHNOW, M. (org.). **No Jardim das Florestas.** Rio do Sul: APREMAVI, 2007.

QUIJANO, A. Colonialidade do Poder e Classificação Social In: SANTOS, B. de S.; MENESES, M. P. (Org.). **Epistemologias do Sul.** Coimbra: Almeidina, 2009, pp. 73-118.

ROSSI, D. R. **Geografia multissensorial**: uma contribuição para o ensino de pessoas deficientes visuais. Tese (Doutorado em Geografia). Instituto de Geociências, Universidade Federal do Rio Grande do Sul, Rio Grande do Sul, 2015. Disponible in: <http://hdl.handle.net/10183/133192>. Access: 02 jun. 2024

SALES, M. O rosto do outro como fundamento ético em Emmanuel Lévinas. **Reflexão**, PUC-CAMP, Campinas, v. 30, n. 88, pp. 105-126, jul./dez. 2005. Disponible in: <https://seer.sis.puc-campinas.edu.br/reflexao/article/view/3181>. Access: 03 jun. 2024.
SANTOS, B. de S. Para uma sociologia das ausências e uma sociologia das emergências. **Revista Crítica de Ciências Sociais**, Coimbra, n. 63, pp. 237–280, 2002. Disponible in: <https://doi.org/10.4000/rccs.1285>. Access: 29 mai. 2024.

SANTOS, B. de S. Para além do pensamento abissal: das linhas globais a uma ecologia de saberes. **Novos Estudos CEBRAP**, São Paulo, n. 79, pp. 71–94, 2007. Disponible in: <https://doi.org/10.1590/S0101-33002007000300004>. Access: 27 mai. 2024.

SANTOS, M. O retorno do território. In: SANTOS, M.; SOUZA, M. A. A. de; SILVEIRA, M. L. (Org.). **Território:** globalização e fragmentação. São Paulo: Hucitec; ANPUR, 1994, pp. 15-20.

SÃO JOSÉ DO RIO PRETO, Prefeitura Municipal de. **Como plantar a sua árvore?** São José do Rio Preto: [s.n.], [s.d.]. Disponible in: <https://www.riopreto.sp.gov.br/wp-content/uploads/arquivosPortalGOV/meio-ambiente/30495_Como%20plantar.pdf>. Access: 29 out. 2023.

SÃO PAULO, Prefeitura Municipal de. Secretaria Municipal do Verde e do Meio Ambiente. **Aves da Cidade de São Paulo.** São Paulo: SVMA, 2012. Disponible in: <https://www.prefeitura.sp.gov.br/cidade/secretarias/upload/meio_ambiente/arquivos/publicacoes/guia_aves.pdf >. Access: 20 out. 2023.

SÃO PAULO, Prefeitura Municipal de. **Prefeitura inaugura Centro de Acolhida para famílias em imóvel da Fundação Casa.** São Paulo: PMSP, 31 ago. 2022. Disponible in: <https://www.capital.sp.gov.br/w/noticia/prefeitura-inaugura-centro-de-acolhida-para-familias-em-imovel-da-fundacao-casa>. Access: 10 mar. 2024.

SÃO PAULO, Prefeitura Municipal de. Secretaria Municipal de Urbanismo e Licenciamento. **Portal GeoSampa**. São Paulo: PMSP, [s.d.]. Disponible in: <https://geosampa.prefeitura.sp.gov.br/PaginasPublicas/_SBC.aspx>. Access: 09 jan. 2024

SILVA, R. O. da; PEREZ-CASSARINO, J.; SOUZA-LIMA J. E. de; STEENBOCK, W. Valuation of native fruits and postcolonial thinking: a search for alternatives to development. **Sustainability in Debate**, Brasília, v. 10, n. 2, pp. 96–124, mai/ago. 2019. Disponible in: <https://doi.org/10.18472/SustDeb.v10n2.2019.22029>. Access: 22 mai. 2024

SILVA-LUZ, C. L.; PIRANI, J. R.; PELL, S. K.; MITCHELL, J. D. Anacardiaceae. In: BFG – BRAZIL FLORA GROUP. **Flora do Brasil 2020.** Rio de Janeiro: Jardim Botânico do Rio de Janeiro, 2020. Disponible in: <https://floradobrasil2020.jbrj.gov.br/FB4381>. Access: 18 out. 2023.

SILVEIRA, M.L. O lugar defronte os oligopólios. In: DANTAS, A.; TAVARES, M. A. A. (Org.). **Lugar-mundo:** perversidades e solidariedades - Encontros com o pensamento de Milton Santos. Natal: EDUFRN, 2011. pp. 79-100.

ISSN 2318-8472, v. 12, n. 86, 2024

TOLEDO, V. M; BARRERA-BASSOLS, N. **A Memória Biocultural:** a importância ecológica das sabedorias tradicionais. São Paulo: Expressão Popular, 2015.

UN-HABITAT – UNITED NATIONS HUMAN SETTLEMENTS PROGRAMME. **World Cities Report 2022**: Envisaging the Future of Cities. UN-HABITAT: Nairobi, 2022. Disponible in: <https://unhabitat.org/sites/default/files/2022/06/wcr_2022.pdf>. Access: 25 jan. 2024.

VIEIRA, M. S. **Os bens comuns intelectuais e a mercantilização.** Tese (Doutorado em Educação). Faculdade de Educação, Universidade de São Paulo, São Paulo, 2014. Disponible in: <https://doi.org/10.11606/T.48.2014.tde-01102014-104738>. Access: 10 jun. 2024.