MULTISPECIES URBANITIES

Passionate Immersion and Exploration of Values of Wild Urban Nature in Amsterdam

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Picture front page: Heron interacting with humans on an Amsterdam balcony in June 2024.

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Abstract

Cities are increasingly becoming a multispecies landscape, but with human forces most dominant, the question of how humans value urban nature arises for a more harmonious cohabitation. This thesis explores how passionate immersion in wild urban nature can shift human valuation of wild urban nature towards more relational and intrinsic perspectives. Building on multispecies theory and plural valuation frameworks, a measuring framework was developed that operationalizes passionate immersion through indicators of attention, affect, and care intersecting with instrumental, relational, and intrinsic values. Fifteen participants in Amsterdam engaged in a "Multispecies Safari", a set of activities designed to foster attentive and affective interactions with more-than-human urban species to understand what their agency meant to them. Qualitative analysis of journals and interviews before, during, and after the activities revealed that participants became more aware of the presence of other urban species, experiencing a stronger relational connection to nature. While instrumental and relational values were initially dominant, participants increasingly expressed plural valuations, acknowledging instrumental, relational, and, to a lesser extent, intrinsic values, following their immersive experiences. However, challenges emerged in communicating posthuman concepts, and language barriers limited the understanding and explicit articulation of intrinsic values, as well as the formation of reciprocal more-than-human relationships. The results suggest that passionate immersion can catalyze shifts in human-nature relationships within short timeframes, although a deeper and longer-term engagement may be necessary to foster more fundamental transformations toward pluricentric thinking. This thesis contributes a novel, empirically tested operationalization of passionate immersion, offering a practical tool for researchers and planners interested in making explicit the values beyond instrumental utility in multispecies entanglements.

Keywords

Urban nature, multispecies, more-than-human, human-nature values, passionate immersion

Acknowledgements

This thesis has been a personal and intellectual quest to understand how nature is valued and how these ideas play out in real life, embracing pluriversal perspectives. I didn't want to stay in an 'ivory tower' but to test these concepts on the ground and find language for my own struggles with a planet in decay. I've been searching for ways to view the world with informed hope and offer inclusive alternatives, which I have found a glimpse of through this thesis. I also acknowledge that not everyone has the luxury of thinking about sustainability and taking the time to research it as I can, though everyone has a relationship with nature, and those should be embraced and celebrated.

Approaching this master's thesis as a playground, self-funded and free of immediate practical demands, allowed me to explore without pressure but follow my internal drive. I'm deeply grateful to Matteo, Bas, Gustaf, Martijn, my grandma and mom, Judith, and many others who helped me stay grounded, and especially to the participants whose input made this research possible. Through writing, I've connected more with my feminine side of care, and I look forward to discovering the many ideas I've yet to encounter beyond this thesis.

Abbreviations

IPBES – Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

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1. Introduction

"The vision of living in harmony with nature, including Mother Earth, describes a world that is just and sustainable, where all life can thrive" (IPBES, Transformative Change Assessment, 2024a, p. 2).

Biodiversity loss, climate change, and consequent ecosystem collapse as failing natural systems in the Anthropocene are set to destabilize the foundations of all life on Earth, including that of the human species (Folke et al., 2021; IPBES, 2024b), as the wellbeing of humans and more-than-humans is interconnected (Raymond et al., 2025). Urbanization is a key driver behind biodiversity loss (Haaland & van den Bosch, 2015; Mansur et al., 2022) and a significant contributor to the loss of connection between humans and nature (Andersson et al., 2014; Soga & Gaston, 2016). Urban more-than-human species are mainly seen as instrumental, whilst multispecies relations and more-than-human lives in their own right are valuable too. Thus, to achieve the vision of living in harmony with nature, a transformative change is necessary, according to the Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES, 2024a).

This thesis argues that transformative change begins with rethinking how human and more-than-human dwellers coexist, by recognizing others through exploring how passionate, immersive wildlife encounters can shift values towards a more relational and intrinsic valuation of wild urban nature. Since cities are expanding globally and space is limited, it is time to recognize more-than-humans as co-dwellers in the human-made environments and start paying attention to the species that humans already live with (Pineda-Pinto et al., 2023; Richardson et al., 2021), learn to be affected (Latour, 2008; Haraway, 2008, 2016; Lorimer, 2015), and foster care for our common home (Pope Francis, 2015).

1.1 Valuation of urban nature

Following the IPBES, the values of nature are *"representations of what people and society care about and what they consider important in relation to nature"* (IPBES, 2022, p. 8). Nature is defined by the IPBES as biodiversity and its relations among itself and with the environment (Diaz et al., 2015), referring to the biotic and abiotic elements in the world, including or not humans, and emphasizing its place-based character (De Oliveira et al., 2024). Nature in general, and thereby also urban nature (Mansur et al., 2022), is valued in three specific ways. In their 2022 publication of the diverse values of nature's contribution to people, the institute defines instrumental, relational, and intrinsic values (IPBES, 2022; Pereira et al., 2022):

- **Instrumental values**: nature is primarily valued for the benefits that people derive from it, which could lead to an optimization of multiple uses of nature.
- **Relational values**: humans are perceived as an integral part of nature, and therefore what is valued is the reciprocal character of the people-nature relationship and how nature gives sense to people's existence and identity.
- **Intrinsic values**: nature has value in and of itself without human intervention, and preserving nature's diversity and functions is of primary importance.

Despite the three different ways of valuing nature, human-nature relationships mainly consist of multiple values simultaneously, for which Pereira et al. (2020) use the term plural valuation. The valuation of nature depends on the culture, practices, or location of the individual (Himes & Murica, 2018; Arias-Arévalo et al., 2018), or, in IPBES terms, their worldviews, knowledge systems, and broader values (IPBES, 2022; Ives et al., 2024). For example, a farmer views nature differently than an urban dweller, and farmers from different cultures also have distinct relationships with nature (IPBES, 2022; Van Dooren et al., 2016). Discussing these plural valuation perspectives is relevant to come up with sustainable and desirable futures fitted to the local context (Pereira et al., 2020; Ives et al., 2024), especially moving away from solely anthropocentric (instrumental: human central) valuations, to include also eco- and pluricentric valuations crelational: no real center, but viewing the world as a 'web of life') of urban nature (IPBES, 2022). The urban context is especially pressing, as cities are expanding rapidly (Mansur et al., 2022), becoming key sites where humans and more-than-human species increasingly interact (Basak et al., 2022), and have the potential to become more eco- and pluricentric places where all species can flourish (Maller, 2021). The term more-than-human also refers to how humans are already entangled with the myriad of other species present in maretial world of which they are part (Abram, 2024; Lorimer & Hodgetts, 2024). Valuations of nature are now discussed in more detail.

1.1.1 Instrumental values

To date, the Western urban planning paradigm, rooted in human exceptionalism (Büschner & Fletcher, 2019) and primarily embedded in the instrumental values of nature (Maller, 2021), has failed to address the complexities of environmental well-being for all. Regardless of serious efforts to make policy-making more participatory (Mommaas et al., 2017), planning processes lack diversity with limited involvement from both marginalized human communities and non-human species (Pineda-Pinto et al., 2023; Raymond et al., 2025). Better yet, more-than-human others are systematically employed to 'solve' man-made problems in cities in technocratic ways. Even in approaches like nature-based solutions, where nature is employed as a passive means to tackle these urban climate challenges to benefit both people and nature (Li et al., 2025), there is a critique of its anthropocentric outlook (Edwards et al., 2023; Raymond et al., 2025; Sarabi et al., 2023). For example, trees function as parasols to combat the urban heat island effect, and wadis are designed as catchment areas to reduce flood risk (Maller, 2021). The downside is that, here, it seems like the only 'nature' that is wanted in cities is the nature that serves humans (Edwards et al., 2023), and the agency of other species to move in their own way is rejected (Ghijselinck, 2023). However, many wild species have adapted to and made the city their home and are increasingly doing so (Denters, 2020; Hinchcliffe & Whatmore, 2006; Schilthuizen, 2018), regardless of human frameworks. Similarly, scholars are calling for a more plural valuation of nature in urban planning (Pereira et al., 2020; Mansur et al., 2022), emphasizing the importance of relational values (Chan et al., 2016; 2018; Mattijssen et al., 2020) and intrinsic values (Bonthoux & Chollet, 2024) of urban nature.

1.1.2 Relational values

On relational values, literature in the field of environmental psychology has expanded on human-nature relations. This research aims to reconnect nature to people and rebuild relations through nature connectedness, aiming to resolve the 'extinction of experience' (Soga & Gaston, 2016) for human well-being (Richardson, 2022; Zylstra et al., 2014) and pro-environmental behavior (Ives et al., 2018; Van Heel et al., 2023). In this field, scholars argue that rather than through cognitive knowledge, people start caring for nature through relational values such as emotional connectedness (Himes & Murica, 2018; Richardson, 2022; Van den Berg, 2024; Chan, et al., 2016), for which they describe frameworks (Ives, et al., 2018; Schultz, 2002) and activities (Van Heel, et al., 2018). Rather than reciprocal, the field of nature connectedness tends to study the one-sided relationship between humans and nature benefiting human well-being. Herein, scholars systematically neglect the well-being of more-than-human entities in interactions (Kimmerer, 2013; McInturff et al., 2025). More space for reciprocity is scarce, but it is gaining more traction in literature (Butler & Richardson, 2024; Ghijselinck, 2023).

Relationships with urban nature are place-based, as they reflect the deep connections people feel with specific places, where nature shapes identity, memory, and a sense of belonging (Chan et al., 2016; Ghijselinck, 2023). To make the relationship reciprocal, scholars call for a more ecocentric and pluricentric paradigm shift that decenters the human as on the same level as other species that are intrinsically valued and connected with through reciprocal and interdependent relationships (IPBES, 2022), as seen in posthumanist scholarship (Haraway, 2016; Tsing, 2015). Here, it is argued that all beings (both biotic and abiotic) exist in relational entanglements and mutually influence each other's environment in modes of world-building, multispecies shaping of cities, not only through human effort. This idea is far from new, as for many indigenous communities this viewpoint was more common and often the standard (Carver & Gardner, 2021; Celermajer et al., 2021; Maller, 2021; Pineda-Pinto et al., 2023; Raymond et al., 2025). What is key to posthuman scholarship is the recognition of more-than-human actors as agents, possessing intrinsic values (Tsing, 2015; Raymond et al., 2025), which is now further explained.

1.1.3 Intrinsic values

Intrinsic valuation of nature encompasses respect for nature in itself and its natural processes, which is an essential part of nature conservation (Bonthoux & Chollet, 2024). Whilst traditional ways of nature protection sometimes lean too much on preventing negative human impact, thereby further separating nature from humans and reinforcing dualist thinking (Büschner & Fletcher, 2019; EEA, 2023; Tammi, et al., 2024), recent approaches to nature conservation focus on cohabitation and all species agency to influence their environment, including that of humans. Especially in cities, the livelihoods of more-than-human others are deeply intertwined with human lives and influences, making it impossible to keep humans out of nature (Kowarik, 2018).

Examples of synergies between natural processes and human activities in the Netherlands are documented in the literature. For instance, Kuiper et al. (2022) present their visioning work in the National Park Hollandse Duinen that incorporates multiple urban areas, embracing local heritage and democratic processes behind decision-making. Mattijssen et al. (2017) highlight the many examples of citizens maintaining green public urban space based on ecological processes, and Solomon (2020) also includes agency to more-than-human species viewing urban nature conservation as reciprocal interactions.

Another novel avenue of nature conservation is urban rewilding, aiming to enhance biodiversity and human-nature connections in cities by allowing ecological spontaneity and reducing maintenance interventions (Bonthoux & Chollet, 2024). In this approach, agency for both humans and more-than-humans is respected (Ward & Prior, 2020). Agents are here defined as beings that are capable of acting by themselves (Contesse et al., 2021), and rewilding is about the dynamic interactions between all agents (Jepson et al., 2018). Wild urban nature is therefore defined in this thesis as spontaneous forms of urban nature that emerge and exist with little or no human control, e.g., as self-seeded plants or feral opportunistic animals (Kowarik, 2018), as a result of dynamic ecological processes (Zeng & Scott, 2025; Carver, et al., 2021) rather than of human design. Though this type of urban nature is currently often overlooked (Pineda-Pinto et al., 2023; Raymond et al., 2025), it can present new imaginaries for human and more-than-human cohabitation based on mutual agency (Bonthoux & Chollet, 2024), sharing spaces as equals, challenging human exceptionalism. However, to make this step, acceptance of wild nature in cities is needed (Snep, 2020), as wild animals are still often seen as 'out of place' in the human-made environment of the city (Basak, et al., 202; Jerolmack, 2008), and informal green spaces filled with spontaneous plants are seen as 'messy' and 'neglected' (Petorelli, et al., 2022; Pineda-Pinto, et al, 2023; Kowarik, 2018; Wartmann & Lorimer, 2024), especially in contrast with more 'manicured', 'well-kept' parks or turf-grass lawns (Aronson, et al., 2014; Danford, et al., 2017; Rupprecht & Byrne, 2014). In literature, research on this topic focuses on conflicts between humans and urban wildlife (Basak et al., 2022; Soulsbury & White, 2015; Rupprecht, 2017a), primarily through surveys. What is missing are qualitative, immersive experiences (e.g., meeting other species) focused on the relation of humans with wildlife, as this is indicated to be influential on people's attitudes (Basak et al., 2022; Soga & Gaston, 2016) and making visible their values (Bonthoux & Chollet, 2024; Diprose et al., 2022). Therefore, a new theoretical lens is needed, for which this thesis proposes multispecies studies.

1.2 Multispecies approach

attunement (Maller, 2021). The multispecies lens enables a shift toward plural valuation, including relational and intrinsic valuation of nature, as called for in literature (Himes & Muraca, 2018; Mansur et al., 2022; Pereira et al., 2020), and highlights the entangled lives of humans and wild urban species (Pineda-Pinto et al., 2023; Raymond et al., 2025).

1.2.1 Theoretical definition

A multispecies approach to urban nature is a way of examining how humans and other species coexist, interact, and influence one another, enabling us to better understand and value these relationships in a more plural manner. Alternatively, as more poetically defined by Van Dooren et al. (2016) as:

"The multitudes of lively agents that bring one another into being through entangled relations... They are complex "ecologies of selves," dynamic milieus that are continually shaped and reshaped, actively—even if not always knowingly— crafted through the sharing of meanings, interests, and affects. Multispecies scholars are asking how human lives, lifeways, and accountabilities are folded into these entanglements." (p. 2, 3)

Van Dooren et al. (2016) are drawing on the field of environmental humanities, where a central relevant theme is multispecies relationships, built through the "arts of attentiveness" (Tsing, 2010; 2015), by asking yourself what else is going on in the city, to notice our human embeddedness and attune to the broader ecosystem of other species that we live and build our world together with (Haraway, 2016; Hohti & Tammi, 2023; Houston et al., 2017). Multispecies scholars view wild nature as place-based patches of spontaneity, as acts of resistance against humans altering the natural environment, where interspecies relations begin (Tsing, 2015). Scholars in this field critique the commodification and objectification of more-than-human others as a fundamental issue and argue for multispecies urbanities (Edwards et al., 2023; Solomon, 2023; Rose, 2013), proposing a plural valuation of urban nature.

1.2.2. Plural valuation of urban nature

In line with a focus on relational values, key to multispecies scholarship is to shift away from anthropocentrism and to blur the lines between nature-culture dualisms by replacing them with relational perspectives (Locke & Münster, 2015). This entails recognizing agency in more-than-human species, which aligns with a focus on intrinsic values (Bonthoux & Chollet, 2024; Locke & Münster, 2015; Ward & Prior, 2020). Automatically and in true rewilding fashion, as a human animal, this also means recognizing your own agency in the (physical) interaction with more-than-humans and meaningfully responding (Van Dooren et al., 2016). Humans are part of nature, and to make urban dwellers understand, they must recognize the impact of their own actions as the dominant force (or apex predator, in more ecological rewilding terms) in the urban environment. However, because of the strong nature–culture dichotomy present in Western society (Arias, 2025; Schouten, 2001) and technology-heavy value chains that have invisibilized our ties to nature (Raymond et al., 2025; Beery, 2023), the natural environment is often controlled rather than seen as something we are entangled with (Chester et al., 2023; Tsing, 2015). As a result, humans are feeling increasingly detached from nature (Soga & Gaston, 2016) and less responsible for the lives of more-than-human beings (Ojeda et al., 2022). In response, multispecies scholars state that humans are not 'impartial observers' (Maller, 2021), but should be more active in caring about more-than-humans, beyond human interest (Puig de la Bellacasa, 2017). How this stance came about is explained now

1.2.3 Research agenda of multispecies studies

Multispecies thinking has emerged over the last 30 years, stemming from the posthuman turn (Celermajer et al., 2021), and continues to gain traction. Starting as a philosophical critique, a few more grounded theories have sprouted from it, such as multispecies justice (Celermajer et al., 2021; Pineda-Pinto et al., 2023; Raymond et al., 2025) and multispecies sustainability (Rupprecht et al., 2020). Recently, the more-than-human voice has also found its way into modes of governance, including rights-based approaches (Abram, 2024; Den Outer, 2021), organizational structures (Pedroso-Roussado, 2025), and urban planning practices (Greenfield, 2020; Mejía & Amaya-Espinel, 2020), thus increasingly proving to be powerful as a philosophical critique (Chwalisz & Reid, 2024). Multispecies methods have primarily remained within the artistic and theoretical/philosophical spheres (Kirksey, 2014) or are centered around multispecies ethnographies, which document the lived experiences of humans with other more-than-human entities (Locke & Münster, 2015; McLauchlan, 2021).

However, these theories are rarely translated into the praxis of urban planning (Houston et al., 2017; Maller, 2021), as a mode of influencing urban living. Additionally, from a relational perspective, for people to care for wild urban nature, affect, as an emotional response, is key in more-than-human interactions, as proposed in theories of nature connectedness (Richardson, 2022; Van den Berg, 2024; Zylstra et al., 2014). Lastly, from an intrinsic valuation perspective, recognizing agency means that people can meaningfully respond in interaction with wild urban nature, for which ethics are also central (Bonthoux & Chollet, 2024; Van Dooren et al., 2016). These notions are not always made explicit in the current primary research method of multispecies ethnographies (Bastian et al., 2017; Locke & Münster, 2015), however, passionate immersion as a method does take this into account.

1.2.4 Passionate immersion

This thesis draws on the multispecies approach by adopting the method of *passionate immersion*, a practice of attentive, respectful engagement with other species that seeks to understand their unique ways of living and relating, not as resources or symbols, but as agents in their own right (Haraway, 2016; Tsing, 2010; 2015; Van Dooren, et al., 2016). Through passionate immersion in wild urban nature, human participants may develop awareness of the other lives they share the city with, which could contribute to the decentering of solely human perspectives and move toward ecocentric and pluricentric valuations of urban nature (Haraway, 2018; Van Dooren et al., 2016). However, operationalizing this method is new, as passionate immersion has been a philosophical idea so far, and a measuring framework does not exist; yet, it has the potential to be put into action (Van Dooren, 2017). Therefore, this thesis adopts an exploratory approach to examine the linkages between the plural valuation of wild urban nature and modes of passionate immersion.

1.3 Research aim

For living in harmony with nature (IPBES, 2024a), new ways of valuing urban nature are needed (Pereira et al., 2020; Mansur et al., 2022; IPBES, 2022), going from the solely instrumental values currently focused on to more relational (Chan et al., 2016; Ives et al., 2017; Richardson et al., 2021) and intrinsic perspectives (Bonthoux & Chollet, 2023; Pineda-Pinto et al., 2023). However, to break away from the long tradition of anthropocentric thinking, also in urban planning (Houston, et al., 2017; Maller, 2021), a new philosophy has to be adopted that is pluri- and ecocentric, meaning that the more-than-human also exerts agency and demands meaningful response for ethical cohabitation, as is proposed in multispecies scholarship (Tsing, 2015; Van Dooren, et al., 2016). Due to the limited practical application of this philosophy, the multispecies practice of passionate immersion is selected, operationalized through the establishment of a measuring framework, which is then validated through the Multispecies Safari: activities inspired by passionate immersion with wild urban nature in Amsterdam. The aim is then to:

A. Operationalize passionate immersion in wild urban nature by creating a practical measuring framework based on the plural valuation of nature, and;
B. Validate this measuring framework by engaging a group of participants who passionately immerse themselves in wild urban nature in Amsterdam by doing the Multispecies Safari. Observe whether their valuation shifts towards a more pluricentric and ecocentric perspective on wild urban nature.

1.3.1 Research questions

The research is hereby answering the following research question:

To what extent does passionate immersion in wild urban nature in Amsterdam contribute to shifting values in human-nature relationships?

With the following sub-questions:

1. How can passionate immersion be operationalized to measure shifts in the valuation of wild urban nature?
2. What kinds of value orientations toward wild urban nature emerge among participants before, during, and after engaging in the Multispecies Safari in their home environment in Amsterdam, based on passionate immersion?

1.4 Metropolitan challenge addressed

When writing the thesis at the AMS Institute for Advanced Metropolitan Solutions, an urban challenge must be addressed (ams-institute.org/urban-challenges/). In this thesis, a connection is made to the metropolitan challenge of **Climate Resilient Cities**. This challenge addressed the preparedness of cities to deal with climate change, for which urban green spaces are indispensable for mitigating the effects of intensified rain showers and cooling the urban heat island effect, as outlined on their website. Hereby, they follow the same human-centered, instrumental rationale as many other policy makers in overlooking the perspective and agency of the more-than-human (Celermajer et al., 2021; De Oliveira, 2024; Maller, 2021) and the other values that urban dwellers might hold in relation to urban nature (IPBES, 2022). More nature in cities is encouraged, especially in the light of climate change (Sarabi et al., 2024), but the diverse perspectives of humans on living together with more-than-humans (Basak, et al., 2022; Bonthoux & Chollet, 2023; Soulsbury & White, 2015), the diverse valuation of nature (IPBES, 2022), and the diverse forms of urban nature, including wilder, undesigned or unwanted species (Pineda-Pinto et al., 2023; Kowarik, 2018; Raymond et al, 2025), deserve more attention, and are thus explored in this thesis.

1.5 The Amsterdam context

That not only humans live in the city is exemplified in Amsterdam. The Dutch capital has recently been nominated as a botanical biodiversity hotspot by the National Database on Flora and Fauna (Sparrius, 2019). The city is also home to the largest heron colony in the country and the most significant urban population of grey herons in the world. These shy common meadow birds have adapted to urban living into cheeky fish hunters (Hrudova, 2017). Additionally, the pigeons on the central Dam square and the elms lining the canals are a common sight for all Dutch people (Kors & Van Gelder, 204; Van Steenbergen et al., 2021). Furthermore, since 1896, Amsterdam has employed an Animal Plague Control unit within the local public health service, making it the only city in the Netherlands (GGD Amsterdam, 2014), thereby entering into ethical and conflictual territory in human cohabitation with other species. As an example of a dense urban space and a historical Western European town, it is interesting to understand how multispecies dwelling works in Amsterdam (Balikçi et al., 2022), and how passionate immersion with these more-than-human species influences valuations held by participants living there. See for more context Annex 1.

1.6 Thesis reading guide

This outline presents the reading guide for this thesis.

Chapter 2: This chapter provides the **theoretical background,** explaining passionate immersion and the literature surrounding wild urban nature in relation to humans.

Chapter 3: In this chapter, the **measuring framework is developed** to operationalize passionate immersion. First, the methodology used is explained, followed by the presentation of the results of this review, which are the established measuring framework, based on the indicators of passionate immersion and nature's values.

Chapter 4: The **validation of the measuring framework** is done, based on qualitative research. First, the methodology for this validation is explained, which involves setting up a Multispecies Safari and collecting qualitative data, as well as its subsequent data analysis. Then, the results are given, reflecting shifting values through the measuring framework.

Chapter 5: This chapter presents the **discussion**, in which the sub-research questions are addressed based on the results, the theory analyzed, and both the evaluation of the method and the experiences of the participants.

Chapter 6: Here, in the **conclusion,** the main findings are summarized, and avenues for future research are given.

2. Theoretical background

After sketching the contours of the different paradigms related to the valuation of urban nature in the introduction, this theoretical framework aims to give a context to the use of passionate immersion as a method.

To recap the proposed paradigms around urban nature:

1. **Instrumental values:** In current planning, urban nature is viewed anthropocentrically as a resource centered around human well-being. Other species are permitted in the city when they benefit humans, which causes biodiversity loss, despite more-than-human species increasingly adapting to urban living as well.
2. **Relational values**: In environmental psychology, nature is viewed as something to relate to, and human-nature connections are measured and fostered to enhance human well-being and pro-environmental behavior. This focus on human benefit overlooks reciprocity and the agency of more-than-human beings, reinforcing an anthropocentric perspective rather than a relational, reciprocal interaction.
3. **Intrinsic values:** Western conservation views nature as having intrinsic worth, deserving protection, especially in pristine states, away from human (inherently negative) impact, thereby reinforcing the idea that people are separate from nature. However, newer approaches, such as urban rewilding, acknowledge both human and more-than-human agency in shaping urban spaces, which remains an under-researched area.
4. **Plural valuation**: Multispecies studies, as a mode of valuing nature based on agency (intrinsic; indicated by the term 'wild') and reciprocal interactions that defy human-nature dualisms (relational), for the well-being of both species (partly intrinsic), deliver plural valuation of urban nature.

In this chapter, it is argued that a shift towards more plural (relational or intrinsic) valuation could emerge through passionate immersion with more-than-human life forms in the city, based on existing theory. Recognizing that the human body can be affected by the bodies of other lifeforms, and acknowledging that more-than-human beings shape the world as much as humans do, can help decenter the human from an anthropocentric to a more pluricentric perspective.

It first clarifies passionate immersion as a method rooted in posthuman thinking. Next, it connects this thinking to theories on nature valuation and Western worldviews. Ultimately, it presents examples of human-wildlife interactions from a theoretical perspective and advocates for a shift in values.

An overview of key terms can be found in the Glossary.

2.1 Multispecies theory

This chapter provides an overview of the literature around passionate immersion. First, the term is defined, after which it is placed in its wider literary context.

2.1.1 Passionate immersion in literature

Passionate immersion originated as a critique of science, as pioneer Tsing (2010) notes, objects of study always affect the scientist studying them. She observed mushroom pickers in Japan and the USA, whose aim was to collect mushrooms, but for that, they had to immerse themselves in the life of fungi in order to know where to find them. The mushroom pickers were attentive to the conditions of the forest (e.g., sensing moisture and shade), and learned through their bodily interactions with the forest, excitedly sharing this knowledge with her. This passion, she states, has been the driver of many scientists in the past as well, but was not clearly shown. Passionate immersion in the lives of others blends objective science with the arts to open the public imagination to more-than-human lives (Tsing, 2010), which should be the aim of multispecies scholarship, according to Van Dooren et al. (2016).

Cultivating the arts of attentiveness is the direction Van Dooren, Kirksey, and Münster (2016) envision for multispecies studies. They place passionate immersion central as a method and define it as follows:

> *"Transforming noticing into attentiveness—into the cultivation of skills for both paying attention to others and meaningfully responding [...] in short, passionate immersion means becoming curious and so entangled, "learning to be affected" and so perhaps to understand and care a little differently"*
> (Van Dooren, et al., 2016, p6)

Thus, passionate immersion is about paying close attention to more-than-human species and understanding response, which is both how your human world makes sense of the interaction based on values, as well as understanding what the more-than-human is trying to tell you by taking them seriously (Van Dooren et al., 2016). Passionate here means to be deeply affected, to experience certain emotions (e.g., awkwardness, loathing, or enthusiasm), and to make room for those by sharing one's affection and findings passionately, with love (Tsing, 2010). Immersion is achieved by relating to and making an effort to understand other life forms (e.g., plants, animals, fungi). Passionate immersion is never done alone; human life is always lived in dialogue with the wider world (Van Dooren et al., 2016; Meijer, 2025). The environment, thereby, is a dynamic milieu and interpreted through embodied awareness. Moreover, by attuning to other beings, it invites reflection on our own humanity, reminding us that we are multispecies assemblages ourselves, composed of gut bacteria, viruses, parasites, and always entangled with the lives of others (Van Dooren et al., 2016).

In the literature, there are a few examples of scholars adopting the method of passionate immersion to influence their praxis as a scientist. Starting with a focus on attention, Bisshop (2025) engaged with various spiders in a laboratory and reflected on ways of communicating with them, through sensory-affective language like seismiosis, which involves vibrating musical tones. The scholar reflected on the way the spider reacted, which was mainly silence, though anticipating the spider's reaction created more attunement and stronger attention. Moreover,

Vurdelja (2023) immersed herself in a Finnish swamp by thinking with a swamp and working and lying in the bog with other volunteers as sentient encounters in a rewilding site. They experienced a mindful being, deep presence, and strong connectedness by feeling and listening to the other species around them and sensing a sense of belonging together. Then, Morrow and Davies (2021) elaborate further on affect and care. The scholars immersed themselves in, interviewed, and observed the network of compost in a community garden in New York as a way to approach notions of circular economies in a less technocratic manner. By approaching the soil with care and attentiveness, they recognized the social, affective, and relational aspects necessary for sustainability transformation. Lastly, Dolling (2020) transforms passionate immersion into a reflection of the scientific method. She and their research team immersed themselves in the life of Spence, a glass eel kept in their office, feeding it self-dug worms and spending hours beside the tank. What began as a small act of care became deeply entwined with memories, family ties, and a sense of place-based belonging. Through auto-ethnographic journaling, Dollin (2020) explored how everyday rhythms, centered around the eel and the aquarium, revealed blurred boundaries between nature and culture, which initiated a paradigm shift in their practice to post-positivist research grounded in care and everyday attentiveness.

Since passionate immersion is proposed as a new approach to science, as suggested by Tsing (2010) and Dollin (2020), it is worthwhile to explore the broader literature that explains this need.

2.1.2 Philosophical roots

Passionate immersion, drawn from Tsing's (2010) approach to science, departs from the idea that nature has culture, and human culture is shaped by nature, defying the nature-culture dichotomy. This dichotomy is evident on one side, where Western society tends to place nature outside the human world, treating it as a realm of objective facts, where species are viewed as objects rather than agents with their own lives, a perspective partly reproduced in modern science. On the other hand, the idea that only humans have culture, holding values that make them unique from other species. However, posthuman thinking, in which multispecies theory is embedded, states that everything is a hybrid of nature and culture.

This critique resonates with the writings of Latour, whose philosophy of science helps contextualize passionate immersion. Latour's actor-network theory illustrates how agency, as the capacity of human and nonhuman actors to act by themselves, arises through networks of relations, emphasizing that actions never occur in isolation but emerge from connections among these human and nonhuman actors as hybrids (Contesse et al., 2021; Latour, 1993, 1999). Agency here is also the capacity to affect and be affected (Gorman, 2019), assigned equally to humans and nonhumans. Latour describes affect as being moved or influenced, illustrated by his example of training noses to distinguish scents, teaching them to move from inattention to attention, or "learning to be affected" (Latour, 2004, p. 207). This capacity to be affected underpins learning and discovery in science. However, Latour argues that science has falsely separated facts from values, reinforcing a nature-culture divide. His declaration that "we have never been modern" (Blok & Jensen, 2024; Latour, 1993) challenges this division, proposing instead a 'parliament of things' where humans and nonhumans alike are represented (Keulartz, 2023; Latour, 2004; Veldman, 2018).

Objectifying nature rather than recognizing its agency fosters anthropocentric thinking. 'Learning to be affected' by other beings offers a way to shift this mindset toward Latour's more relational thinking: the body as the key to being in relation to nature.

2.1.3 "Learn to be affected"

In multispecies studies, 'learning to be affected', is the multisensory experience that is unconsciously translated in the body, in advance of thought, into feelings and emotions experienced in embodied encounters (Lorimer, 2015). Found by Latour (2004), Van Dooren et al. (2016) adopt it as a key process in passionate immersion. The concept is further illustrated by involving more-than-human entities in the process, where agency and attunement are central.

As a first example, Haraway (2008) and her companion species. She recounts training her dog Cayenne to participate in agility games. She views this as a process of articulating bodies to each other, becoming available and attuned to each other, in such a way that both become more interesting, open to surprises, and inventive, they learn to be affected and become-with. The latter term she explains as *"if we appreciate the foolishness of human exceptionalism then we know that becoming is always becoming-with"* (p. 244). Another multispecis example by Van Dooren et al. (2016) also place becoming-with as central, giving the example of how a bee knows what to do with a flower and the flower know how to attract a pollinating bee: *"both forms of life are shaped and made possible through a shared heritage [...] the exchange and emergence of meanings, immersion in webs of signification that might be linguistic, gestural, biochemical, and more"* (p. 2). Hereby, both authors emphasize that action is always the result of situated relationships, where agents affect each other based on their own situated (culturally influenced) knowledge, or nature/culture hybrid ideas, as Latour (1993) calls it.

Another last of 'learning to be affected' is provided by more-than-human geographer Lorimer (2015) in relation to wild nature. He applies this concept to his experience with a passionate ecologist lying in a field at dusk, attuning to the different sounds the birds' corncrakes make to distinguish individuals and count them (Lorimer, 2015; Verploegen et al., 2025). The term attunement here is used in the sense of becoming-with, "it involves cultivating dispositions that attune a listening body to the landscape" (Lorimer, 2015, p. 43), as seen in Latour's nose with the perfume kits and Haraway's body with her dog's. Lorimer highlights passion as a driver that challenges nature-culture dualisms, aligning with Tsing (2010). With this, he critiques Latour for centering humans too much and neglecting the myriad lively agents outside human control, such as corncrakes (Lorimer, 2015). Yet in urban contexts, human and more-than-human lives are inextricably linked (Keulartz, 2023), making the focus on how affect shapes these interactions, and how they are cared for.

2.1.4 "Care a little differently"

"Care a little differently" is what Van Dooren et al. (2016, p. 6) describe as an ethical possibility that arises from 'learning to be affected'. Once we become attuned to others, no longer objectifying them but recognizing them as more-than-human beings, care becomes a significant responsibility (Puig de la Bellacasa, 2017).

In this thesis, the response to being affected builds on Haraway's (2008, 2016) concept of response-ability and Puig de la Bellacasa's (2017) ethics of care. Response-ability is the capacity to listen and respond to more-than-humans through situated, attentive relationships (Haraway, 2008). It aims to act constructively in relation to their needs and flourishing (Keulartz, 2023; Paulson, 2019), engaging collaboratively rather than imposing human-centered perspectives (Haraway, 2016). Haraway (2016) encourages humans to think-with other species, recognizing their perspectives and agency rather than imposing human-centered views, like Bisshop (2025) tried in setting up a dialogue with the spider. Moreover, the authors suggest developing new semiotics where needed, using signs as a means of communication in exploring more mutual understanding as care (Bisshop, 2025; Haraway, 2016).

The response-ability approach recognizes that care is not detached or objective but deeply ethical and relational (Lorimer, 2015). Latour's (2003) shift from 'matters of fact' to 'matters of concern' further underscores the need for scientists to explain why facts matter and deserve care. Building on this, Puig de la Bellacasa (2017) proposes 'matters of care' as a framework to represent more-than-human beings with respect and responsibility. She emphasizes that care has three dimensions: it is material, as vital doing; relational, as an affective state; and political, as an ethico-political obligation to act for shared futures (Puig de la Bellacasa, 2017). For example, she illustrates how soil is often objectified merely as a resource to maximize yield, ignoring its agency and ecological significance (Roelvink, 2018). By sensitizing ourselves to soil's needs, care shifts from exploitation to a responsibility of maintenance, reminding us that "we must take care of things in order to remain responsible for their becomings" (p. 43). More-than-human care is thus defined as ethical and practical responsibility to attending and responding to the needs, well-being, and agency of more-than-human beings through situated relationships that recognize them as co-inhabitants with intrinsic value, not merely resources for human use (Puig de la Bellacasa, 2017).

Ultimately, response-ability and care entail open, curious engagement that promotes transformative and reciprocal relationships (Haraway, 2016; Hofman, 2023). Haraway (2016) urges us to "stay with the trouble" of complex, messy multispecies worlds, acknowledging that we co-create the world with other beings through unexpected collaborations. She also views care as kinship—to make kin and build enduring, non-disposable relationships with more-than-humans, similar to adopting them as family (Haraway, 2016).

This concept that all life is interconnected and interdependent, forming the basis of these philosophical texts, is inspired by Indigenous traditions. It is also increasingly adopted by science communicators and policymakers, as evidenced by the IPBES (2022) publication on the diverse values and valuation of nature, which states that making kin is a connection between humans and nature based on equal agency and identification with each other.

2.1.5 Link to values

As stated in the aim of this thesis, observing a shift away from the dominant focus on anthropocentric thinking and moving to plural valuation of urban nature may represent a first step toward living in harmony with nature (IPBES, 2024a). This chapter argues how passionate immersion can influence the praxis of scientists, by revealing that science is never value-free but

always a co-production of nature (facts) and culture (values). Scientists, therefore, do not hold a "view from nowhere" (Haraway, 1988, p. 589) but speak from their situated knowledges. This realization causes a shift, according to Van Dooren et al. (2016), in two parts, as explained above:

- First, by fostering attentive engagement with other species, which leads scientists to recognize more-than-humans not as passive study objects but as agents with their own ways of being.
- Second, by encouraging careful, situated responses that acknowledge the entangled knowledge and ethical obligations arising from these relationships, and by 'staying with the trouble' through continuous care.

The call for passionate immersion with the lives of others (Tsing, 2010; Van Dooren, 2016), caused scholars like Bisshop (2020), Vurdelja (2023), and Dollin (2020) to untangle their situated knowledges that influence their praxis. However, this thesis follows Morrow & Davis' (2021) approach in taking passive immersion as an opportunity to have participants relate to wild urban nature differently, as an invitation to *"alternative ways of loving and living with"* (p. 6) urban wildlife. By making these valuations explicit, the study examines the potential of passionate immersion to challenge anthropocentric perspectives embedded in Western planning paradigms.

The following chapter will further unpack what these values are and how they shape participants' understanding of wild urban nature.

2.2 Nature's values

Humans interpret the world and interactions with wildlife through their value systems (Soulsbury & White, 2015), which guide our everyday practices and decisions (Cities With Nature, 2025). These values influence how we are affected by and care for nature (Haraway, 2008; Lorimer, 2015). The IPBES (2022) offers a comprehensive overview of how different human societies value nature, which they define as a representation of what they find important and thus care about in relation to nature. This overview helps to understand more concrete ways humans appreciate wild urban environments and identify potential shifts in those valuations.

2.2.1 Contextualizing values

Since the inception of the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), various teams of international, interdisciplinary researchers have collected and generated knowledge on the relationships between people and nature (Díaz et al., 2015). In this way, the IPBES (2022) has created an overview of the valuation of human-nature relations: the typology of values. This typology is a tool to get an overview of the relevant values, for example, to be used to inform decision-makers about what is at stake, and for whom (IPBES, 2022). It can also be used to categorize valuations of nature for research (Himes et al. 2023).

For this thesis, the core of this typology lies in 'specific values' (instrumental, relational, and intrinsic), which can be measured using 'value indicators'. The specific values are influenced by 'broader values', overarching principles and goals, and 'worldviews', such as knowledge systems and language. To assist in identifying how people value nature, four 'life frames' can also be identified, which influence all these layers of valuation. Figure 1 illustrates the IPBES' diverse valuation of nature, accompanied by an explanation from Raymond et al. (2023) below.

In the process of collecting and generating knowledge, the IPBES took not only a scientific Western lens but as wide a lens as possible, including indigenous knowledges (Díaz et al., 2015; IPBES, 2022; Raymond et al., 2023). In this way, they have also incorporated more posthuman ideas, as sketched out above, as these knowledge systems share the relational view of the world based on the ethical and caring interconnectedness between humans and more-than-humans (Gould et al., 2023).
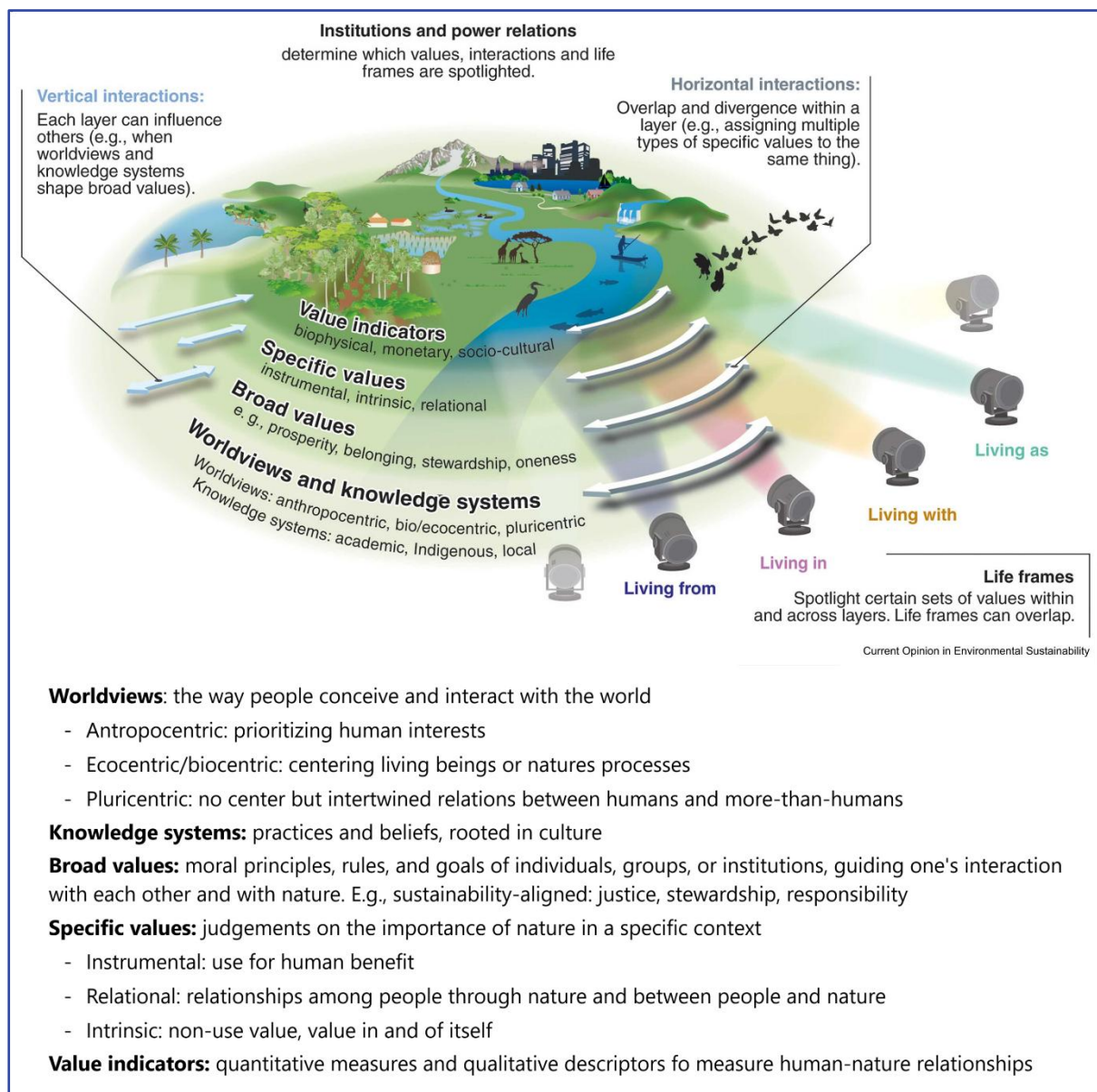
Figure 1. IPBES typology of the diverse values of nature. Source: Raymond et al. (2023)

The outline of this chapter provides further explanation of the typology. Starting with the broad values and worldviews that will be explained hereafter, relevant for this thesis, followed by a brief overview of the life frames proposed by O'Connor and Kenter (2019). The introduction (Chapter 1.1) leaned on the 'specific' values, instrumental, relational, and intrinsic; thus, their interpretation relevant for this research is already explained there. The relevant value indicators by the IPBES (2022) are socio-cultural indicators, though the method of behavior-based valuation, resulting in possible questions like 'what is consumed or appreciated about nature?', or 'what do people do in the landscape?', or 'what are changes in traditions or practices?'. More specific indicators are not given, but these questions are used to inform the method in Chapter 4.1.2.

2.2.2 Worldviews and broad values

This subchapter explores the worldviews and broad values underlying specific valuations. It shapes how humans living in Western cities express their views of nature, including the participants involved.

Starting off with worldviews. They refer to the way people see the world, which is often informed by religion, science, or stories of how the world came to be (IPBES, 2022). In the West, these cultural and philosophical traditions are influenced by long-standing traditions of thought, of which a general overview is given for context. Western ideas about nature are rooted in concepts such as Christian stewardship, Greek dualism, and the Enlightenment, which have historically framed more-than-human life as inferior (Buijs, 2009a; Schouten, 2015), thus developing an anthropocentric worldview. These views contributed to a human-nature divide, reinforced during industrialization and urbanization (Gershon, 2020; Van de Born, 2008). Nature was increasingly viewed as wild and 'pristine,' and it was believed to be outside of human influence (Van den Berg, 2024). Nowadays, the term "wild nature" has strayed away from its wilderness ideal, yet it still expresses the capacity for self-regulation and autonomy from human practices (Arias, 2025; Bonthoux & Chollet, 2024). These ideas have motivated people to take action and adopt practices of nature conservation, explained below.

Broad values, defined as guiding principles and life goals by the IPBES (2022), shape how humans interact with and assign importance to nature, including values like prosperity, belonging, livelihood, and justice (IPBES, 2022, p. 57). These broad values directly influence people's positions in key theoretical debates about nature conservation. Two central debates in this field exemplify this: (1) land sparing vs. land sharing: whether nature should be isolated (Wilson, 2016) or integrated into human environments (Büscher & Fletcher, 2019; Mommaas et al., 2017), and (2) static vs. dynamic conservation: whether ecosystems should be frozen in time (Soulé, 1985; Van Dam et al., 2024) or allowed to dynamically evolve (Büscher & Fletcher, 2019; Kowarik, 2011). These debates reflect tensions between broad values, such as security and justice, and the realities of ongoing environmental change (EEA, 2023; Ripple et al., 2017). This thesis positions itself in support of land-sharing and dynamic conservation, challenging the human-nature dualism, highlighting nature's dynamic character, and emphasizing more-than-human species as relational agents within urban socioecological systems (Mommaas et al., 2017; Bonthoux & Chollet, 2024). This perspective is essential for fostering meaningful connections to urban nature that influence people's livelihood (Richardson et al., 2019), as explored further in Chapter 2.4.

Thus, where 'wildness' was first associated with 'pristine' nature outside the city, wild species have further entered the city. And while these debates and broad values highlight human perspectives on nature, they often overlook the complex, situated relationships humans have with more-than-human life in the city. To capture these diverse and entangled ways of valuing nature, O'Connor and Kenter (2019) developed the Life Frames framework, which integrates different worldviews, broad values, and specific values, making space for more inclusive, multispecies understandings of urban nature.

2.2.3 Life frames of Values

The Life Frames of Values framework by O'Connor & Kenter (2019) was developed to help integrate more-than-human agents into human value systems. To better incorporate relational and intrinsic values, O'Connor and Kenter (2019) propose four life frames: living together from, in, with, or as nature, that are not mutually exclusive but can exist alongside each other. They help to position human-nature relations within interconnected networks with nature. The IPBES (2022) adopted these life frames and linked them to specific, broad values, as detailed in Table 1.

Table 1. Four life frames as defined by O'Connor & Kenter (2019) and the IPBES (2022) broad values and specific values aligned with those. Source: O'Connor & Kenter (2019) & IPBES (2022)

	Living **from** nature	Living **in** nature	Living **with** nature	Living **as** nature
Definition by O'Connor & Kenter (2019)	Humans instrumental use of the environment as a resource	Place-bounded approach where culture and social events happen	More-than-humans, as *others*, recognizing that humans are just one species among a larger biotic community sharing life on this planet.	More-than-humans as *self*, individually, and collectively
Examples by O'Connor & Kenter (2019)	Energy, learning, and inspiration, food and feed	Physical and psychological experiences, aesthetic, supporting identities	Regulation of hazards and extreme events, habitat creation, and maintenance	Practices of care, lived experiences, spiritual
IPBES (2022) broad value examples	Prosperity, livelihood security, efficiency, distributive justice for sustainable use	Belonging, beauty, freedom, enjoyment, health, procedural justice for place-based management	Stewardship, responsibility, respect, recognition justice with regard to other species	Oneness and harmony with nature, reciprocity, self-realization, epistemic justice
IPBES (2022) specific values	*Instrumental* use & option values of material & regulating nature's contribution to people, *relational* values of non-material nature's contribution to people in agriculture & fisheries	*Relational* values of non-material & context-specific nature's contribution to people	*Intrinsic* values, relational values associated with stewardship, *instrumental* values of regulating nature's contribution to people	*Relational* & *intrinsic* values for communities of humans & non-humans

O'Connor and Kenter (2019) observed that the current way of valuing nature overly emphasizes human benefits, as seen in widespread frameworks such as 'ecosystem services' and earlier efforts by IPBES to map 'nature's contribution to people' (Díaz et al., 2018). This approach often overlooks more holistic relationships between humans and nature, as well as non-use values such as intrinsic worth. They also found the concept of intrinsic values to be too abstract (Chan et al., 2016) and limited in policy application, which tends to protect some entities (e.g., particular species or national parks) while ignoring others. This yields a view of more-than-humans as separate others, either in relation to humans or each other, and as self, not dependent on human valuation but still articulable by humans, since without expression, intrinsic values risk being lost in decision-making. Hence, they represented intrinsic valuations through 'living with' and 'living as' nature, providing practical examples that the IPBES (2022) built upon, as seen in Table 1.

O'Connor and Kenter (2019) do not explicitly rely on posthuman literature, as previously outlined, but parallels can be drawn. They focus on more-than-human life without specifying agency. Conversely, IPBES (2022), which adopts the Life Frame of Values, links agency to 'living as nature', viewing nature as more-than-human, recognizing ecological processes or wild spaces, and asserting their own agency. Their approach is rooted in indigenous knowledge, such as Quechua communities in Perú, which regard Ausangate Mountain as a "powerful earth-being" (p. 62). Consistent with O'Connor & Kenter (2019), IPBES (2022) emphasizes that social assessments of intrinsic values require qualitative and participatory methods. Similarly, Haraway (2008, 2016) and Latour (1999, 2004) do not explicitly mention intrinsic or relational valuation, but by critiquing the objectification of nature, they share the same conceptual foundations as O'Connor and Kenter (2019; Geoffrey, 2022).

Therefore, the Life Frame of Vlaues framework significantly enhances the IPBES' specific values (2022) by emphasizing relational and intrinsic valuations of nature. With the theoretical background established, it's now time to explore the urban more-than-humans that have been extensively theorized so far.

2.3 Urban wildlife

The lives of more-than-humans in the city, influence the lives of humans. This thesis explores the concept of wild urban nature, aiming to foster attentiveness and response to it, which may potentially shift the perception and valuation of humans. The term 'wild' is selected to move away from the instrumental view of nature that dominates current valuation paradigms. As Haraway (2008) states, *"only wild animals in the conventional Western sense, as separate as possible from subjugation to human domination, can be themselves. Only wild animals can be somebody, ends not means"* (p. 207).

This section provides an overview of existing ideas around wild urban nature from literature, and human-nature interactions within urban settings. It begins with a more precise definition of wild urban nature, followed by an exploration of encounters with urban wildlife in literature.

2.3.1 Wild urban nature

In the face of urbanization, urban ecology as a field is emerging, and its social dimension, including human-nature relationships and cohabitation, is also increasingly important (Rupprecht, 2017a). Urban nature in Western cities exists as a mosaic between human infrastructures, from highly managed to spontaneously emerging ecosystems (Soulsbury & White, 2015). While many still associate urban green space with maintained environments like turfgrass lawns, hedges, and gardens, often shaped by aesthetic or economic values (Van den Berg, 2024; Van der Jagt et al., 2016; Aronson et al., 2017), a growing recognition is emerging for wild urban nature, such as ruderal vegetation and non-domesticated animals, for example found in abandoned or unmanaged areas (Rink & Emmrich, 2005; Rupprecht, 2017a).

Wild nature is defined by Kowarik (2018) along a gradient of four urban natures based on degrees of wildness, as seen in Figure 2:

1. *Remnant nature* from pre-urban ecosystems;
2. *Patches of agrarian landscapes* with historical and cultural land uses;
3. *Designed nature* like parks and gardens with low wildness;
4. *New urban wilds* novel ecosystems in human-abandoned sites such as vacant lots.
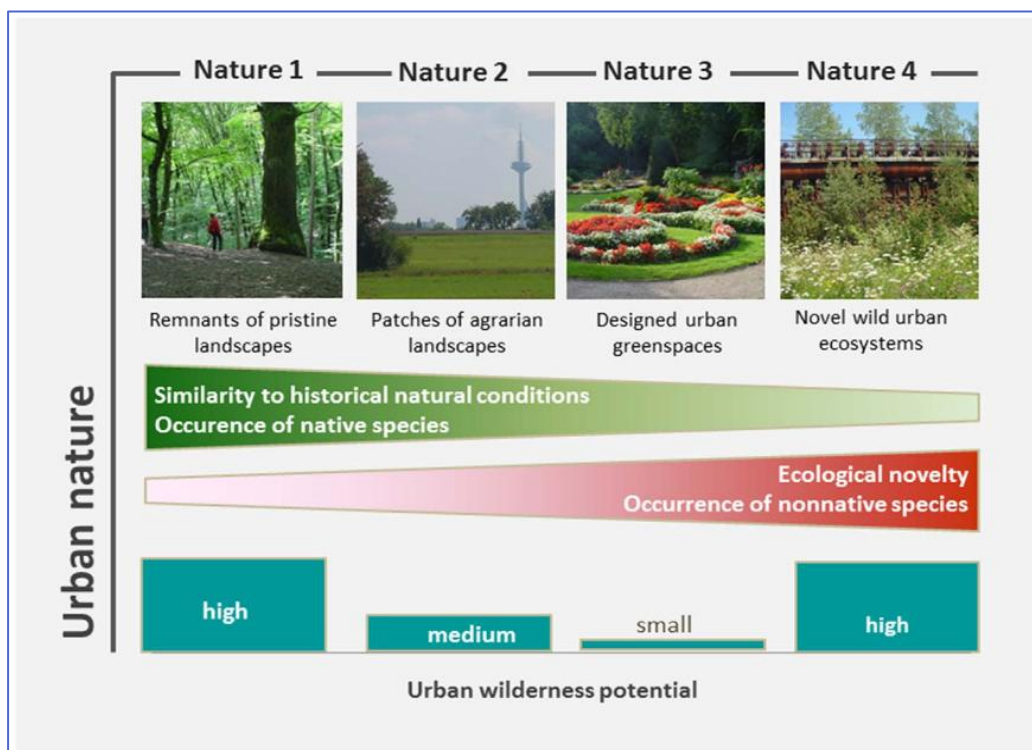
Figure 2. Urban nature types range from pristine to highly urbanized, each with different histories, uses, and ecologies— but all contribute to urban wildness to varying degrees. Source: Kowarik (2018).

Human-wildlife encounters primarily occur in these green spaces (portrayed as Urban Nature 3 and 4) or more suburban areas (Urban Nature 1 and 2), and can range from positive to negative, a phenomenon also referred to as human-wildlife conflict (Soulsbury & White, 2015). Encountering wildlife is key to experiencing urban nature (Danford et al., 2017; Basak et al., 2022), including species such as pigeons. Though, Dunn et al. (2016) warns through the 'pigeon paradox' that the

limited exposure of people living in cities to abundant, human-associated species like pigeons may distort perceptions of nature, risking reduced support for conservation, and thus advocate for restoring native urban ecosystems, improving access, and rethinking how we portray urban wildlife. Which will be explained further now.

Access to wild urban nature is essential for the mental and physical well-being of urban dwellers, enabling them to connect with nature (Soga & Gaston, 2016). Unequal access is a prevalent issue, a topic often explored in literature from an environmental justice perspective. For example, scholars found that neighborhoods that are more often marginalized have less access to green space, or only to green space of lower quality, lacking the benefits of urban nature (Tozer et al., 2023). Others found that the concentration of greenery is usually found in affluent areas, which can fuel gentrification and displacement (Anguelovski et al., 2022). Therefore, scholars increasingly encourage cities to provide the common good of urban green spaces, offering them quantitative point systems for urban developers to achieve a minimum level of green/blue space (Kruuse, 2011) or adopting rules regarding canopy cover or distance to green space (Konijnendijk, 2022). However, informal green spaces can also be embraced, though they are often negatively portrayed (Pineda-Pinto et al, 2023).

The portrayal of nature in cities is shaped by people's values, which determine what they perceive as urban nature, which is exemplified by the contrast between maintained, manicured green spaces and areas with little human intervention (Stanford, 2025). Typically, urban nature is portrayed as orderly and designed for human benefit, emphasizing instrumental values such as aesthetics or recreation, which aligns with anthropocentric worldviews, valuing nature for its utility rather than its own right. Conversely, informal green spaces, places with less human maintenance, offer a different portrayal of urban nature. Rupprecht and Byrne (2014) define these as urban areas with strong human disturbance covered partly by spontaneous, non-remnant vegetation, such as Urban Nature 4 (Kowarik, 2018). These spaces, like street verges, brownfields, and railway edges, are not formally managed for recreation, agriculture, or conservation, and their use is informal and temporary (Rupprecht & Byrne, 2014).

Wild nature more often appears in informal green spaces where species settle (Danford et al., 2017). Danford et al. (2017), studying rewilding in Boston, note these spaces tend to be in less affluent areas, offering ecological and recreational opportunities and habitats for wildlife. Their use depends on management and amenities; unmanaged areas associated with disinvestment may feel unsafe but are still used for recreation. Rupprecht (2017b) found similar results in Japan, where people value these spaces for recreation, biodiversity, and their wild nature. Moreover, these findings suggest that while informal or wilder green spaces, where various species thrive, can be used by humans for leisure, people often do not, due to cultural beliefs that urban nature should be tidy and maintained, primarily serving instrumental functions (Aronson et al., 2017; Sarabi et al., 2023). Recognizing the value of wilder urban nature, for relational (encountering more species) and intrinsic (biodiversity habitats) values, could shift human use to embracing urban nature as it is.

The next sections will explore experiences with more-than-human species.

2.3.2 Urban human-wildlife interactions

With more-than-human beings also living in cities, human-wildlife interactions are inevitable (Soulsbury & White, 2015) and are more frequently described in literature as well. Therefore, scholars set out to explore human-wildlife interactions in the urban environment, for example, Rupprecht (2017a) in Brisbane and Sapporo, and Basak et al. (2022) in Krakow, based on quantitative surveys, outlined below.

Examples of human-wildlife interactions

Generally, Rupprecht (2017a) and Basak, et al. (2022) determine wanted animals are ones that serve the ecosystem or are aesthetically pleasing or have a charismatic factor (e.g, birds and butterflies) but unwanted species are ones that cause nuisance (e.g., rats, crows, pigeons, wild boars) for humans of for other species (e.g., being invasive or destroying anothers' habitat). Humans noted to feel conflict when they experienced personal anxiety, intrusion into property, and destruction of crops by animals in cities (Basak, et al., 2022). Both authors highlighted 'ecosystem disservices'as a cause, which is the struggle over space and wellbeing with other more-than-humans that can result in humans getting negatively affected (e.g., getting bitten by mosquitos, fear for parasites or other zoonosis through bird poop, or sneezing because of pollen), which can be a reason for humans to seek dominance over these species (Chester, et al., 2023; Soga & Gaston, 2022).

Moreover, species among each other risk getting predated on, outcompeted by invasive others that lack natural predators, or getting sick (Soulsbury & White, 2015), which is increasingly the case in monoculturally landscaped urban green spaces (Mullink, 2020), which is also a human-created problem. More-than-human species suffer human interference also through habitat fragmentation (e.g., no food or nesting locations available), light, noise, and chemical pollution (Soulsbury & White, 2015), or mechanical or manual removal, especially of 'weeds' (Aronson, et al., 2017). However, services from humans to more-than-humans are also present, as sometimes care is given to injured animals (Basak, et al., 2022), or hungry animals, like 'feeding the ducks' as a common cultural occurrence with also negative implications (Tully & Carr, 2023). Vice versa, animals also feed on human trash, which can create more waste through bin-raiding (Soulsbury & White, 2015), which is particularly a problem in Amsterdam (Het Parool, 2024, Figure 3).

Figure 3. Wildlife feeding on trash in Amsterdam, source: Juan José Corona

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These examples show that urban human-wildlife interactions can lead to conflict or care, but they also shape human valuatio of nature, which is further explored in the next subchapter.

2.3.3 Plural valuation of nature through interactions

Interactions with nature shape how humans value the more-than-human world, as discussed in previous chapters. Yet, the exact mechanisms by which these interactions generate affect, foster care, and influence valuation remain complex and contested, with numerous theories proposed across disciplines. Few studies have clearly mapped how shifts in values or the visibility of nature's worth occur (Diprose et al., 2023). This chapter therefore draws on an interdisciplinary approach to explore these processes, beginning with Lorimer's (2015) concept of nonhuman charisma and followed by insights from environmental psychology.

Non-human charisma determines how we notice nature based on an affective pathway, and thus how we value more-than-human species (Lorimer, 2015), defined as *"the features of a particular organism or ecological process that configure its perception and subsequent evaluation"* (p.39), in which he determined three types:

1. **Ecological charisma** refers to the inherent ecological traits of an organism that determine how easily it is perceived, such as its size, pattern, or color (mainly visual). It is about an organism's body, so not about the context where it is found, like with the following two types.
2. **Aesthetic charisma** as the visual properties of the more-than-human that triggers affect on the human who it encounters, e.g., beauty or sensory appeal (or repulsion) or alterity(differentness than normal), experienced, possibly also through media or ecotourism.
3. **Corporal charisma** as the affect it delivers on the body of the human in close proximity and practical interactions with the more-than-human.

The affects of aesthetic and corporal charisma are the same as discussed in Chapter 2.1.3, and can people learn to be affected and therefore can initiate a shift in how species are valued (Lorimer, 2015). However, this also raises the possibility that species lacking charisma or those that go unnoticed may not be encountered at all. As observed in the interactions described by Rupprecht (2017a) and Basak et al. (2022), participants primarily mention birds and mammals, animals of reasonable size that are usually visible. Arcari et al. (2021) also highlight the invisibilized animals in urban nature, such as the many animals driven to slaughterhouses and ending up on people's plates every day, evoking the corporal charisma of an instrumental use object (Lorimer, 2015). Pineda-Pinto et al. (2023) argue that plants in informal green spaces are often perceived as 'weeds' and removed, thereby disregarding the entanglement of other species that rely on these plants. Another often negatively perceived species is the rat. Aivelo (2022) tested school kids' attitudes towards these unloved animals and found that when engaging with rats and learning about them, kids found them less disgusting, highlighting also the importance of education, but which is outside the scope of this research.

From the field of environmental psychology, mechanisms for building a relationship with nature are studied in terms of well-being and pro-environmental behavior, laying the groundwork for relationally valuing nature, as well as incorporating affect into the intrinsic valuation of nature. The literature on human-nature connections begins with Wilson's (1984) concept of 'biophilia', which is explained as the innate human desire to connect with nature, vital for both survival and well-being. Disconnection from nature is seen as harmful, theorized as 'nature deficit disorder' (Louv, 2005) or 'the extinction of experience' (Soga & Gaston, 2016). Immersion in nature can restore mental focus (Kaplan & Kaplan, 1989; Zhang et al., 2019). This makes urban green spaces essential for creating opportunities for people to connect with nature, as well as for increasing

emotional affinity, so that people are more inclined to visit nature, as described by Soga and Gaston (2016), thereby remedying the extinction of experience. The aim of connecting nature to people in this field of study is to improve their well-being and motivate them to engage in pro-environmental behavior. Hereby, human-nature values are drivers or are influenced by interventions that bring people closer to nature (Ives et al., 2018).

First, various models are employed to connect people to nature for well-being. For example, nature-relatedness encompasses emotional, cognitive, and experiential dimensions of how people relate to nature (Nisbet & Zelenski, 2014). Or the way humans connect to nature is through five pathways or nature connectedness: contact, emotion, meaning, compassion, and beauty (Lumber et al., 2017; Richardson et al., 2019). Other models conceptualized are 'connection to nature' (Zylstra, et al., 2014), or 'connectedness to nature' (Mayer & Frantz, 2004), in different urban settings (Lovati et al., 2023; Moya-Méndez et al., 2022), with different methods such as quantitative (Richardson, et al., 2019), mixed-methods (Van Heel, et al., 2024; Lumber, et al., 2017) or based on arts (Muhr, 2020), and with many different activities for different target groups such as kids (Richardson & Chapple, 2021; Richardson & Butler, 2022). Additionally, this concept has been researched in environmental education, using the Nature-in-Self Scale (Schultz, 2002; Liefländer et al., 2013), which will be employed later in Chapter 4.1.3.1 This scale, as applied in the Dutch context by Van den Berg et al. (2021), revealed that while many Dutch citizens feel a connection to nature, urban residents report a disconnection due to a lack of experience or knowledge.

Experience and knowledge are key to pro-environmental behavior, as theorized by Ives et al. (2018), who linked behavior to a sense of connectedness with nature. The authors conducted a meta-analysis of publications on the topic to identify five 'system leverage points', as illustrated in Figure 4, that describe the mechanisms by which interventions for reconnecting people with nature can bring about system change. They also noted that deeper leverage points change people's value system.

The mechanisms of human-nature connectedness they prescribe are (in order of effectiveness of the parameters for system leverage):

1. **Material**: Consumption of goods, resource extraction.
2. **Experiental**: Direct interaction with natural environments, leisure time in recreational green environments.
3. **Cognitive**: Knowledge or awareness of the environment and attitudes and beliefs towards nature.
4. **Emotional**: Feelings of attachment to or empathy towards nature, affective response.
5. **Philosophical**: Perspective or worldview on what nature is, why it matters and how humans ought to interact with it, and humanity's relationship to the natural world.
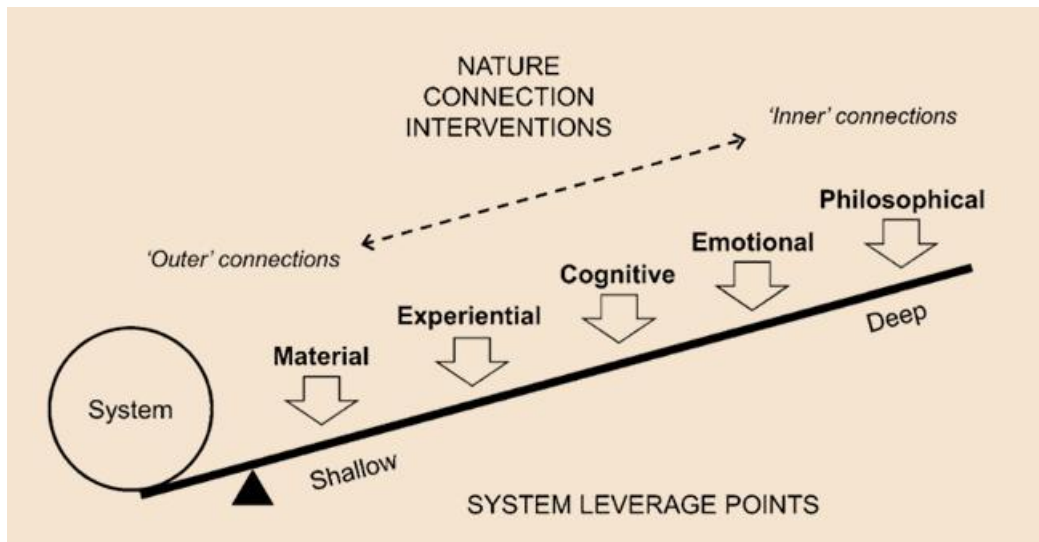
Figure 4. Mechanisms by which interventions for reconnecting people with nature can bring about system change. Model by Ives et al., 2018.

It is essential to recognize that these mechanisms are interdependent and can operate concurrently, and that interventions may simultaneously impact multiple mechanisms. Additionally, Van Heel (2024) and Richardson et al. (2022) emphasize that these transformative mechanisms are most effective when guided by intentionality, mindfulness, and attentiveness to nature, which they determine is a general driver behind all mechanisms. Passionate immersion is exactly this practice (Van Dooren et al., 2016) and thus can transform human-nature values (Ives et al., 2018).

Although effective in promoting human well-being, nature connectedness frameworks often neglect reciprocity and more-than-human perspectives (Kimmerer, 2013; McInturff et al., 2025). Nature is frequently treated as an abstract background rather than as individual others (Buijs, 2009a), which limits its application in urban planning (Houston et al., 2018). Therefore, this thesis is informed by these concepts and takes a multispecies approach through passionate immersion.

To summarize, the following mechanisms thus shape valuation, blending Lorimer (2015), Ives et al. (2018), and Lumber et al., 2017:

- **Experiential and cognitive processes** show how awareness and knowledge foster values, mainly instrumental.
- **Affective mechanisms**, like Lorimer's ecological, aesthetic, and corporal charisma, explain how sensory engagement influences whether species are noticed and valued. Together with **emotional** responses, as theorized through biophilia and nature connectedness pathways, motivate care and relational valuations.
- **Philosophical shifts** challenge nature-culture divides, opening space for intrinsic valuations beyond human-centered perspectives.

These mechanisms collectively influence whether nature is valued instrumentally, relationally, or intrinsically, as highlighted in the findings of this research. These mechanisms, together with others, inform the establishment of a measuring framework that assesses passionate immersion in wild urban nature.

3. Measuring framework for passionate immersion

In this chapter, the method of the integrative literature analysis is given, which gives way for the resulting framework to measure the valuation of wild urban nature through passionate immersion, in response to the first research question, *"How can passionate immersion be operationalized to measure shifts in the valuation of wild urban nature?"*.

3.1 Methods for framework development

This exploratory, inductive study aims to operationalize passionate immersion (Van Dooren et al., 2016) into a measuring framework that reveals underlying and shifting values toward urban nature (Diprose, 2022; Pereira et al., 2020), which will be discussed here. Later (Chapter 4) the measuring framework is validated through participants' interactions with wild urban nature in Amsterdam in a Multispecies Safari.

3.1.1 Literature review

To establish the measuring framework, a comprehensive cross-disciplinary body of literature was analyzed through an integrative literature review. The integrative literature review is employed to assess current knowledge on a specific topic across multiple communities of practice, which may be grounded in different paradigms, and to inform the development of a new, integrated research program (Cronin & George, 2020). In this thesis, an integrative literature review is employed to analyze human-nature relations in the urban environment across multiple fields of study, as outlined in Table 2. Since there is no existing analytical framework to assess passionate immersion (except for a handful of philosophical texts), this thesis attempts to establish an operationalization through a proposed measurement framework, thereby redirecting the literature analyzed into a multispecies perspective, drawing on existing methods for fostering and analyzing human-nature interactions. Later, this framework will be validated by having participants practice passionate immersion through a Multispecies Safari and measuring a shift in their valuation of wild urban nature through the framework.

Following the protocol prescribed by Cronin and George (2020), the types of studies available for synthesis are first explored, and the necessary communities of practice are selected to provide a balanced representation of the perspectives. Then, these literatures are thematically analysed, looking for commonalities in the concepts based on research goals and topics. In this case, the articles were scanned on their narrative: how cohabitation between humans and more-than-humans was described, what values were held, how they affected the human, and what methods were used in the research. The process of linking the different literatures together was iterative and multilayered, with key concepts throughout including agency, responsibility, wild nature, and human-nature relationships, as well as the values held. Finally, the literature was synthesized to form the measuring framework presented in Chapter 3.2.2, and further detailed in Annex 2.

3.1.2 Literature selection and synthesis

The integration of multiple fields of study was essential due to the unique knowledge held in each field. Hereby, an overview is given of the relevant communities of practice selected, along with the type of knowledge that contributed to the operationalization of passionate immersion into a measuring framework, as a multispecies approach to human-nature interactions in Amsterdam.

1. **Environmental psychology:** notions around human-nature connections were employed due to the detailed methods and pathways by which people relate to nature, both in urban and natural environments, albeit from an anthropocentric perspective focused on the wellbeing benefits for humans.
2. **Environmental humanities:** including post-humanism, multispecies studies, and feminist new materialism, these critical literatures are employed that attempt to decenter the human perspective, adopting more eco- and pluricentric approaches to human-nature relations. This involves concepts related to multispecies entanglement, more-than-human agency, and care ethics. Mainly philosophical text, literature that gives less practical application but builds the epistemic foundation for the thesis.
3. **Urban planning:** ways of designing and thinking about cities to include more nature and green spaces, not only for instrumental services but also for the cohabitation of humans with more-than-human species, for example, through the multispecies justice perspective.
4. **Urban ecology:** from a more ecological perspective, theories on (urban) nature conservation form a socioecological system thinking approach, through topics such as urban rewilding. This is used to situate the framework in the context of wild urban nature.
5. **Values:** overarching theory on what values people hold towards urban nature, as a measuring indicator for change, where specifically relational values are more explored so far in urban planning.

The literature was identified during the period from January to June 2025, using a snowballing method that followed citations from researchers to other researchers, and through the use of keywords in the Wageningen University Library, Scopus, and Google Scholar, as listed in Table 2.

Table 2. Key literature sources analyzed (among others) in the integrative literature review.

Field of study	Key words	Sources analyzed (not limited to)
Environmental psychology	Nature connectedness, nature relatedness, human-nature relations	Bulten et al., 2017; Buijs, 2009a,b; Ives et al., 2018; Legienza et al., 2021; Lovat, et al., 2023; Liefländer et al., 2013; Lumber et al., 2017; Mayer & Frantz, 2004; Richardson, et al., 2019; Schultz, 2002; Soga & Gaston, 2016; Van den Berg et al., 2021; Van Heel et al., 2024; Zylstra et al., 2014
Environmental humanities	Multispecies studies, passionate immersion, ethics of care, more-than-human agency	Bisshop, 2025; Haraway, 2008, 2016; Latour, 1993, 1999, 2004; Lorimer, 2015, Morrow et al., 2021; Roelvink, 2018; Puig de la Bellacasa, 2017; Tsing, 2010, 2015; Van Dooren et al., 2016
Urban planning	Ecocentric planning, multispecies urbanism	Edwards et al., 2023; Franklin, 2017; Maller, 2021; Houston et al., 2017; Solomon, 2023
	Environmental or multispecies justice	Celermajer et al, 2021; Pineda-Pinto et al., 2023, 2025; Raymond et al., 2025; Rupprecht et al., 2020, Sarabi et al., 2023
Urban ecology	Urban rewilding, wild urban nature, human-nature interactions, novel ecosystems, informal green spaces	Basak et al., 2023; Bonthoux & Chollet, 2023; Büschner & Fletcher, 2019; Carver & Gardner, 2022; Danford et al., 2017; Dunn 2016; Kowarik, 2011, 2018; Pettoreli, 2024; Mommaas et al., 2017; Rupprecht & Byrne, 2014; Rupprecht 2017a, b; Russo et al., 2023; Soulsbury & White, 2015
Values	Values in human-nature relations	Díaz et al, 2015; Diprose et al., 2023; IPBES, 2022, 2023, 2024a, 2024b; Kuiper et al., 2022; Pereira et al., 2023; PBL, 2018; Mansur et al., 2022;
	Specifically relational values for urban planning	Chan et al., 2016, 2018; Ghijselinck, 2023; Himes & Murica, 2018; Mattijssen et al., 2020, 2017

3.2 Results framework development

Based on the examined literature, a framework for measuring the valuation of wild urban nature through passionate immersion is established and presented in this chapter. First, the measuring indicators are explained, based on passionate immersion and valuation of nature. Then, the measuring framework is further explained.

3.2.1 Indicators

The measuring framework is based on two sets of indicators: one focused on passionate immersion and the other on the valuation of urban nature. The individual indicators and the theoretical context are explained hereafter.

The indicators based on passionate immersion (1-3) and nature's values (4-6) intersect to build up the measuring framework, which assesses whether passionate immersion contributes to a shift in valuation of wild urban nature in Amsterdam by participants of this research. This is visually represented in Figure 5.
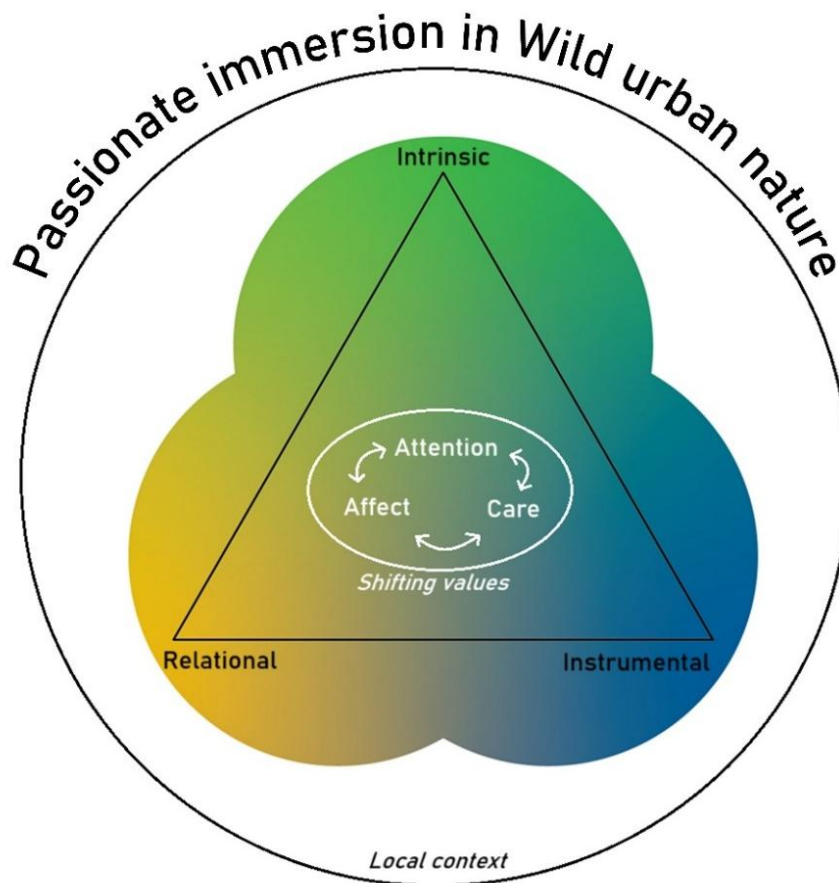
Figure 5. Visual representation of the indicators used in this thesis, based on the plural valuation of nature intersecting passionate immersion indicators in the relative space between the values, based on the work by the IPBES (2022), Pereira, et al. (2020), edited by the author

3.2.1.1. Passionate immersion indicators

Passionate immersion, at its core, is a philosophical idea of viewing science through a multispecies lens, as explained in Chapter 2.1, but holds potential to be made actionable in field research (Van Dooren, 2017), shifting humans' perspective on wild urban nature away from anthropocentric frameworks that are all too familiar in Amsterdam.

By taking the philosophical text by Van Dooren et al. (2016) literally, this thesis operationalized passionate immersion into the measuring framework based on three indicators. Its key ideas are captured in this quote: *"at its core it [passionate immersion] involves **attentive interactions** with diverse lifeways [...] becoming curious and so entangled, '**learning to be affected'** and so perhaps to understand and **care a little differently"** (p. 6).*

The three indicators of *attention, affect,* and *care* define the process of passionate immersion (see Figure 6) and are explained as follows:

1. **Attention** is the act of noticing or paying attention
   - To the environment, general descriptions of more-than-human elements
   - To the individual species within the shared environment.
2. **Affect** reflects the bodily experience of being moved
   - Engaging with the senses
   - Allowing emotions to emerge
   - Recognizing the agency of others by being affected
   - Being open to the response of more-than-humans
3. **Care** is an ethical responsibility to respond to the needs of more-than-human beings, and its actionable nature reflects the possibility of a changed perspective and behavior of participants toward the multispecies world.
   - Ethical responsibility
   - (Changed) perspective
   - (Changed) behavior

These passionate immersion indicators form a dynamic loop, where each deepens and supports the others.

Figure 6. Indicators of passionate immersion by Van Dooren et al. (2016).

Whilst these indicators are directly taken from Van Dooren et al. (2016), they are also inspired by other literature from the multispecies field, rooted in posthumanism as discussed in Chapter 2.1.

3.2.1.2. Valuation of nature indicators

Nature's values often underlie human attitudes, beliefs, perceptions, and behaviors (IPBES, 2022). In this thesis, values were chosen as a measuring indicator because they are less volatile and prone to change (e.g., impulsivity), making them more stable (Kendal & Raymond, 2018), which makes them more reliable for visibility (Diprose et al., 2022). Additionally, other measuring indices, such as attitudes, beliefs, perceptions, or behaviors, can be symptoms of the underlying values. Moreover, these indices are not as well mapped as the values, thanks to the thorough work by the IPBES in their value assessment (2022), as explained in Chapter 2.2. Lastly, values are also a tool to make more intangible benefits or costs visible to different stakeholders, and thus can be used in policy or decision-making (IPBES, 2022).

Following the extensive research by the IPBES (2022), three specific values are key to human-nature relations:

4. **Instrumental** (anthropocentric values), nature is valued for its usefulness to humans, reflecting a human-above-nature logic;
5. **Relational** (pluricentric values), nature is valued through reciprocal, non-hierarchical relationships between humans and more-than-humans;
6. **Intrinsic** (ecocentric values), nature is seen as having inherent value and agency, independent of human benefit.

Now, both sets of measuring indicators are intersected to form the measuring framework, further outlined below.

3.2.2 Measuring framework

To operationalize the method of passionate immersion, a measuring framework was proposed, based on the intersecting indicators of passionate immersion (attention, affect, and care) and the plural valuation of urban nature (instrumental, relational, and intrinsic).

In this way, the following table was devised, seen in Table 3. The table can also be interpreted as a scale, where the x-axis represents the IPBES (2022) worldviews: antropocentric (left; more instrumental valuation), pluricentric (middle-right; relational/intrinsic valuation), and ecocentric thinking (right; intrinsic valuation).

This chapter outlines all measuring points (the individual 'cells' of the framework) in brief, step-by-step detail. For additional context, refer to Annex 2. The passionate immersion indicators explain how participants can view wild urban nature in instrumental, relational, and intrinsic ways.[1] This work is grounded in the background outlined in the introduction and theoretical framework, and is further enhanced by insights from the integrative literature review. These measurement points will later serve as the coding structure for transcripts of interviews and journal entries from participants engaged in the Multispecies Safari.

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[1] Whilst passionate immersion comes from the posthuman tradition where nature is mostly valued only relationally (focus on interactions) and intrinsically (focus on agency), instrumental valuations can still be given to the indicators by only focusing on human benefit.

Table 3. Operationalization of passionate immersion into wild urban nature in Amsterdam, given indicators and how they relate to underlying values of nature.

Passionate Immersion Indicators		Instrumental values	Relational values	Intrinsic values
Attention	Descriptions of the environment	Nature for human benefit	Nature for connection	Nature for itself
	Descriptions of species	Species role	Species meaning	Species for themselves
Affect	Senses	Sensory well-being	Sense of connection	Non-interpretive senses
	Emotions	Emotional well-being	Appreciation	Empathy
	Agency	Agency for (dis)services	Respecting others	Autonomy in agency
	Response	Response for (dis)services	Response on engagement	Autonomy in response
Care	Ethics	Prosperity	Stewardship	Kinship
	(Changed) perspective	What nature should bring to people	Connection to nature	Similar value
	(Changed) behavior	Pro-environmental behavior	Seeking relation	Minimizing impact

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3.2.2.1 Measuring attention

Attention, as the act of noticing or paying attention, is subdivided into: 1) paying attention to the environment, and 2) paying attention to individual species in the shared environment. These measuring indicators individually are intersected with the valuation of nature and defined further in Table 4 below:

Table 4. Attention intersected with the valuation of wild urban nature.

Passionate immersion indicator ATTENTION	Measuring point	Explanation	Source
Instrumental valuation			
Attention to the environment	Nature for human benefit	Descriptions of wild urban nature in the environment focus on its physical features and material aspects, viewed solely through a human-centred lens of utility and benefit	Hunt et al., 2020; Lumber et al., 2018; Van Heel et al., 2024
Attention to other species	Species role	The more-than-human species only plays an instrumental, material role for human benefit	Hunt et al., 2020; IPBES, 2022; Ives et al., 2018; Van Heel et al., 2024
Relational valuation			
Attention to the environment	Nature for connection	A connection to the environment, place-attachment: participants describing a connection to their environment	Bulten et al., 2017; Mattijssen et al., 2017
Attention to other species	Species meaning	Relations with other beings, cultural meanings of others, noticing relations between species: how the human relates to individual more-than-human beings	Bisshop, 2025; Chan et al., 2016; Tsing, 2015; Van Heel et al., 2023
Intrinsic valuation			
Attention to the environment	Nature for itself	Observing the environment for its own sake: taking part in the environment is described from an ecocentric perspective, not necessarily for human benefit	O'Connor & Kenter, 2019
Attention to other species	Species for themselves	Observing nature, other species for its own sake: certain other species are central to the perspective or the movement, thinking-with	Haraway, 2016; Lorimer, 2015; Solomon, 2023; Verploegen, 2025

3.2.2.2 Measuring affect

Affect, as the multisensory, embodied experience of meeting more-than-humans and being moved by them, consists of the indicators: 1) senses, 2) emotions, 3) agency, and 4) response. These are further explained per valuation as the measuring points in Table 5 below:

Table 5. Affect intersected with the valuation of wild urban nature.

Passionate immersion indicator AFFECT	Measuring point	Explanation	Source
Instrumental valuation			
Senses	Sensory well-being	Feelings contributed to well-being, such as attention restoration for mental health, or taking time for leisure in green space to calm one's body down, which affects the body directly, sometimes unconsciously.	Aronson et al., 2017; Lumber, et al., 2017; Kowarik, 2008, 2018; Rink & Emmrich, 2005; Soga & Gaston, 2022
Emotions	Emotional well-being	Expression of beauty and emotional well-being or the opposite, tied to nostalgia, is a conscious verbalization of the emotions experienced	Doughty et al., 2023; Kaplan & Kaplan, 1989; Zhang et al., 2019
Agency	Agency for (dis)services	Agency for (dis)services: more-than-human beings help or harm human by their actions in service or disservice.	O'Connor & Kenter, 2019; IPBES, 2022; Roelvink, 2018
Response	Response for (dis)services	Response for (dis)services without attunement: response is interpreted in service to the human, from the human perspective, without attunement	Lorimer & Driessen, 2014; Lorimer, 2015

Passionate immersion indicator AFFECT	Measuring point	Explanation	Source
Relational valuation			
Senses	Sense of connection	Mindful presence: open and present to others, perceiving species through aesthetic and corporal charisma	Lorimer, 2015
Emotions	Appreciation	Sense of place, spiritual experience: relations to other species can affect a human by feeling emotions around appreciation, feeling a strong sense of place, and having spiritual experiences, realizing that life is done together.	Bulten, et al., 2017; Ojeda, et al., 2022; Van den Berg, et al., 2024; O'Connor & Kenter, 2019
Agency	Respecting others	Respecting others as co-inhabitants: Humans feeling part of the ecosystem as multispecies neighbours in their city	Basak, et al., 2023; Rupprecht, 2017a
Intrinsic valuation			
Senses	Non-interpretive senses	General listening, watching, feeling without need for human interpretation, being present amongst other species is enough	Haraway, 2015; Bisshop, 2025
Emotions	Empathy	Feeling affected by the state of being of another, means being open to meaningfully respond	Basak et al., 2022; Haraway, 2016; Ojeda et al., 2022
Agency	Autonomy in agency	Recognizing inherent worth and autonomy in agency: self-determination is key, more-than-human beings are autonomous in action	Ghijsenlinck, 2023; Gorman, 2019
Response	Autonomy in reponse	Recognizing the other's inherent worth and freedom to respond or not, both beings realize they co-shape the world through interaction and think together, not for each other	Bisshop, 2025; Haraway, 2016; Puig de la Bellacasa, 2017

3.2.2.3 Measuring care

Care, defined as the 1) ethical responsibility - to respond to the needs of more-than-human beings, holds transformative potential for 2) possibly changed perspective and 2) behavior. These the indicators are further explained per valuation as the measuring points in Table 6 below:

Table 6. Affect intersected with the valuation of wild urban nature.

Passionate immersion indicator CARE	Measuring point	Explanation	Source
Instrumental valuation			
Ethics	Prosperity	Providing prosperity, impacting the livelihood of the individual: taking the ethical responsibility in responding to other species as a way to improve the well-being of humans, without regard for the other impacted species	Kendal & Raymond, 2019; O'Connor & Kenter, 2019; Ives, 2018; Tully & Carr, 2023
(Changed) perspective	What nature should bring to people	Narrative on what nature should bring to people, and a change herein, which are culturally embedded human ideas about nature, prone to change due to passionate immersion	Buijs, 2009; O'Connor & Kenter, 2019
(Changed) behavior	Pro-environmental behaviour	Pro-environmental or well-being geared behavior changes: meaning the behavior of or actions undertaken by humans towards urban nature, which can change due to passionate immersion	Ives et al., 2018; Richardson et al., 2019, Soga & Gaston, 2016
Relational valuation			
Ethics	Stewardship	Ethical concern, compassion, responsibility, stewardship: include care for other species from a human perspective, act upon worries or well-being for more-than-humans by providing them with 'what's good for them'	Chan et al., 2016; Danford et al., 2017; Lumber et al., 2017; Mattijssen et al., 2017
(Changed) perspective	Connection to nature	Identity transformation, wanting a stronger connection to nature: how a person's relation to nature is embedded in one's identity	Richardson & Chapple, 2021; Solomon, 2023; Van den Berg et al., 2021
(Changed) behavior	Seeking relation	Behavioral shift in seeking relation, talking with others about nature, place-keeping: acting upon a (stronger) relation to nature through passionate immersion, by seeking more nature interactions or tending an urban garden.	Basak et al., 2022; Buijs et al., 2019; Mattijssen et al., 2017; PBL, 2018; Ives et al., 2018; Schouten, 2001; Soga & Gaston, 2016

Passionate immersion indicator CARE	Measuring point	Explanation	Source
Intrinsic			
Ethics	Kinship	Ethical obligation, kinship with nature: caring for each other to cocreate worlds of mutural flourishing	Haraway, 2016; Paulson, 2019
(Changed) perspective	Similar value	The human as a being among many, with similar value to others: a decentered worldview.	O'Connor & Kenter, 2018; Puig de la Bellacasa, 2017; Roelvink, 2018
(Changed) behavior	Minimizing impact	Behavioral shifts respecting nature, minimizing impact: trough natures and one selfs inherent value, mutual respect shifts behavior towards more accountability.	Puig de la Bellacasa, 2017; Verploegen, 2025

With the measuring framework now set to observe how passionate immersion could influence potential changes in values, it will then be validated with participants immersed in wild urban nature in Amsterdam through a Multispecies Safari. Further details of this process are provided below.

4. Validation of the passionate immersion measuring framework

After conducting the integrative literature review and establishing the measuring framework based on passionate immersion and plural valuation indicators, the next step is to validate this framework. This will help answer the second sub-question: *"What kinds of value orientations toward wild urban nature emerge among participants before and after engaging in the Multispecies Safari in their home environment in Amsterdam, based on passionate immersion?"*

This was accomplished by involving participants in Multispecies Safari activities, which are inspired by passionate immersion and designed to foster interaction with urban nature in Amsterdam. Data was collected through interviews conducted before and after the activities. The transcripts herof were then analyzed based on the measuring framework (Table 3). In this way, we aimed to validate the workings of the established measuring framework (Chapter 3.2) by observing a shift in the valuation of wild urban nature through activities that foster attentiveness to these more-than-humans living in Amsterdam (Van Dooren et al., 2016; Van Heel et al., 2024).

First the method for the validation of the framework is explained, after which the results of the validation are given.

Figure 7. Invitation poster for the Multispecies Safari.

4.1 Methodology: validating the measuring framework

To validate the measuring framework for operationalizing passionate immersion, a Multispecies Safari was organized for 15 participants. Qualitative data was collected and analyzed. As an outline: this chapter describes the methods used, starting with the setup of the Multispecies Safari, then explaining the data collection process, and finally outlining how the data was analyzed.

4.1.1 Multispecies Safari setup

For the testing, 15 participants engaged in activities inspired by passionate immersion over two weeks in April 2025, called the 'Multispecies Safari'. This active part of the research is inspired by multispecies ethnographies (Locke & Münster, 2015; McLauchlan, 2021) and activities related to nature connectedness (Van Heel et al., 2024; Lumber et al., 2017).

4.1.1.1 Theoretical background

This research expanded on existing activities carried out by the nature connectedness research group (Hunt et al., 2020; Lumber et al., 2017; Richardson et al., 2021) and the Earthfullness Challenge (Van Heel et al., 2024), which focus on getting people to notice and interact with nature and be affected by it. However, unlike these methods, passionate immersion also emphasizes the agency of other species to respond and how humans respond to them with care (Van Dooren et al., 2016). Therefore, only activities that fostered the development of at least one passionate immersion indicator (attention, affect, or care) were selected. Additionally, the activities incorporated a multispecies perspective by using reciprocal language whereby more-than-humans are not objectified but sensitized, and including prompts that inquire about the responses of more-than-human species.

4.1.1.2 Participants

Participants in this study were invited through the author's personal network and through affiliated institutions such as Waag Futurelab and the AMS Institute. Invitations were extended with a poster outlining the research objectives and expectations (see Figure 7). The criteria for participation included:

1. Having to live in Amsterdam
2. Wanting to commit to a week of outdoor activities, prescribed by the researcher.

Engaging local knowledge holders, such as regular people living in Amsterdam, to share their experiences is a key focus of IPBES (2024a) and CBD (2022), as they promote alternative learning through continuous, worldview-based environmental observation (Tengö et al., 2017). This method offers more embodied, context-specific, and culturally grounded insights, aligning with Haraway's idea of situated knowledges (2016). When selecting participants, efforts were made to ensure balanced representation across gender, age, neighborhood, and educational level, as similar studies and involvement in green initiatives often reveal biases toward older individuals and females (Bulten et al., 2017; Lumber et al., 2017). Based on previous research, the goal was

to recruit up to 20 participants (Hunt et al., 2020; Lumber et al., 2017; Van Heel et al., 2024). Of the 27 interested individuals, 3 were unavailable, 5 did not respond, and 3 did not meet the criteria (living outside Amsterdam). Additionally, 2 were initially included but did not do any activities within the scheduled timeframe and were thus excluded based on mutual consent. As a result, 15 participants ultimately took part in this research.

The selected participants are introduced in Annex 6.1. Summarizing the selection: of the 15 participants, all are under 52 years old, almost all are theoretically educated, there was a 50/50 split in gender, and everyone lived in a relatively dispersed but mostly central area of the city of Amsterdam.

The 15 participants mentioned were all human, but the research also included more-than-humans encountered during the Multispecies Safari activities (Rautio et al., 2022). As stated in the theory, this research adopts the idea that these more-than-humans were recognized as members of the shared ethical community (Puig de la Bellacasa, 2017), thus deserving explicit attention to avoid their invisibilization in this research (Pineda-Pinto et al., 2023). The human participants were asked to observe more-than-human behaviors and habitats, recognizing their agency by asking themselves what matters to these codwellers of the city, and reflecting on these encounters (O'Connor & Kenter, 2019).

4.1.1.3 Location

The research takes place in Amsterdam. During the Multispecies Sarari activities, the participants were asked to go outside. Herein, it is assumed that they chose a park, street, waterway, or green urban space of their choice in Amsterdam to carry out the activity. It was key that the activity is done in a familiar area in their neighbourhood, as *"familiar places are the beginning of appreciation of multispecies interactions"* (Tsing, 2012, p. 142). Learn more about the city's context in Annex 1.

4.1.1.4 Materials needed

The following materials are needed, as presented in Table 7.

Table 7. Materials needed for the activities, including the use, the medium, and source.

Material	Use	Medium	Source
Journal	Participants share notes and replies to the journaling prompts	Digital: WhatsApp, Signal group chat Optional: not only written text but voice notes can also be sent in.	Van Heel, et al., 2024
Camera	Participants share the pictures of wild nature they took and other possible pictures that they want to share for context or inspiration.	Digital: Phone, a direct means to report in the group chat	Hunt, et al., 2020; Richardson, et al., 2021
Clothing	Weather-appropriate clothing of choice by the participant.		Richardson, et al., 2021

4.1.1.5 Activities

The Multispecies Safari was scheduled for April 2025, giving participants two weeks, from April 14 to 28, to complete various activities. Some activities were required daily (see Table X), such as sending pictures or journaling, while others were optional choices from the list in Table X. Allowing participants to choose provided flexibility for them to select an activity suited to their day and current state. Additionally, the variety of activities was designed to evoke different experiences of urban nature (Hunt, et al., 2020; Van Heel, et al., 2024). The two-week duration aimed to foster a longer-lasting sense of connection to nature (Sheffield, et al., 2022). The activities were intended to be done alone, encouraging participants to focus more awareness on their surroundings and be less distracted by social interactions (Richardson, et al., 2021). If participants chose to do activities together, they were asked to report on that.

The daily activities (Table 8) were designed to promote place awareness, sensory engagement, and reflection for the participant, while also facilitating simultaneous data collection on the activity for the researcher.

Table 8. Daily activities, with their goal and source prescribed.

	Multispecies safari activities	To what end?	Source
	Share what the weather is like.	Places the experience in a context of external influences.	
	Take a photo of wild, spontaneous urban nature.	Engages people with the subject in its environment through creating a composition. Builds a stock of visual data material on what people regard as wild urban nature.	Richardson et al., 2021
	Send the location of the activity.	Builds spatial data on the locations where people experience urban nature.	
	Breathe deep three times before starting.	Calms the mind, lets the participant be present in the moment and more aware of their surroundings.	Van Heel et al., 2024; Doughty et al., 2022
	Take in the message: "Don't think too much, just experience and adapt what encounters are given to you".	Encourages people to step out of cognitive engagement and into a more affective (emotional and sensory) awareness.	Rauti et al., 2022
	Fill in the journalling prompts.	Allows for reflection and direct feedback on the activity	Lumber et al., 2017; Van Heel et al., 2024

The activities, selected by mandatory choice (Table 9), were designed to allow participants to experience passionate immersion through a Multispecies Safari, aligning with the dimensions of passionate immersion (see Chapter 3.2).

Table 9. Mandatory choice of Multispecies Safari activities, dimension of passionate immersion, and the source of the activity.

	Multispecies safari activities	Sources	To what end? (defined by author)
1	Sit somewhere outside for 10 minutes and observe your surroundings by watching	Hunt et al., 2020; Richardson et al., 2021; Sensory Trust, 2024	Attention
2	Sit somewhere for 10 minutes with closed eyes and observe your surroundings by closely listening to all the other beings around you	Hunt et al., 2020; Van Heel et al, 2024	Attention
3	Walk around in your neighbourhood and pick up litter, think about how it affects species (animals and nature) who live there.	Hunt et al., 2020	Affect; Care
4	Draw or list all the ways you're connected to nature through the things you use (like food, clothes, or energy). Map your ecological connections like that		Care; Affect
5	Find an animal or plant and look at it closely, write or draw what you notice	Hunt, et al., 2020; Van Hee, et al., 2024	Attention; Affect
6	Take off your shoes, walk barefoot outside, and feel the ground with your hands. Lay on the ground if you want. Try to communicate with the earth	Hunt et al, 2020; Van Hee, et al., 2024; Vurdelja, 2023	Care
7	Look closely at the bark of a tree and find as much different lives as possible	Van Heel et al., 2024	Attention; Affect
8	Watch the sunset and gaze at the stars, reflect on your position in the universe	Hunt et al., 2020; Van Heel et al., 2024	Care
9	Talk about nature with someone, e.g. about your favorite plants or animals, and describe or ask why. Also incorporate natures voice: what would these species have to say to you?	Butler & Richardson, 2024; Hunt et al., 2020	Care; Affect
10	Reflect on your influence on the surroundings around your house. Try to imagine all the connections you have to the others around you	Mayer & Frantz, 2004	Care
11	Greet other species you meet and tell them something you appreciate about them.		Care; Affect
12	Write a poem about nature that involves other species	Hunt et al., 2020	Affect
13	Imagine being another specimen (e.g. a pigeon, a squirrel, a dog) how would you feel in this place? Consider their perspective on your being there and the others being out there as well.	Mayer & Frantz, 2004; Solomon, 2023	Affect; Care
14	Co-create an artwork with other bodies: natural materials that you can find	Hunt et al., 2020; Van Heel et al., 2024	Affect
15	Reflect on places where you are rooted and had positive nature experiences, how have these places shaped you?	Van Heel et al., 2024; Van den Berg, 2024	Care

Participants engaging in these two sets of Multispecies Safari activities (daily and mandatory choices) thus experienced a form of passionate immersion (Van Dooren et al., 2016). Through interviews conducted before and after the activities, as well as shared journals, data were collected on how participants experienced the Multispecies Safari, and hence, passionate immersion with wild urban nature. The process of handling this data is explained in the following section.

4.1.2 Data collection

Before and after the Multispecies Safari, interviews were conducted with the participants, and journals were shared during the daily activities.

4.1.2.1 Interviews

Semi-structured interviews were conducted with the participants both before and after the daily Multispecies Safari activities, resulting in 30 interviews. Most interviews were held in person at the participants' preferred locations, except for four that were conducted over the phone. The interviews lasted between 25 and 45 minutes each, depending on the amount of information the participant shared. This method was selected to allow for comparison while also leaving room for personal stories (Van Heel et al., 2024). Before the daily activities, the participants were asked about several topics:

- Demographic background, reasons for participating, and intentions with the activities.
- Environmental awareness, or how they currently perceive their environment.
- Definition of (wild) urban nature, and relation to and values surrounding urban nature.

After the Multispecies Safari, the participants were interviewed again, this time taking a more reflective approach to their overall experience. Then, topics were discussed regarding their environmental awareness, relationships, and values related to urban nature, with a focus on whether they felt a change before and after the embodied experiences through the daily Safari activities. See Annex 3 for the interview guideline before these activities, and Annex 4 for the interview guideline afterwards. The interviews were held both in Dutch and English, based on the participants' preference for language.

To ethically inform the participants, the researcher reiterated the study's goal and participation expectations at the beginning of each interview, building upon the information provided in the invitation (Figure 7). Participants were also informed about their role and how their data would be protected. They were made aware of the informed consent process, including their right to withdraw and how their data would be stored (see Annex 5 for the consent form).

4.1.2.2 Journals

The daily activities of the Multispecies Safari were documented in journals kept by people. Diaries are more commonly used in qualitative research, such as multispecies ethnographies (Vurdelja, 2023; Bastian et al., 2017) and studies on nature connectedness (Hunt et al., 2020; Richardson et al., 2021), to capture reflections as they occur. Additionally, the act of writing itself serves as a reflective process (Coghlan & Brydon-Miller, 2014). In this study, keeping a journal was therefore crucial for recording participants' immediate reactions during the activity, when their minds were still fresh from interacting with wild urban nature. The journal entries were guided by prompts that participants could respond to (Van Heel et al., 2024), which are presented below.

Journaling prompts:

- What activity are you doing?
- Who are you with?
- Do you see other species? can you describe them?
- What interactions with nature do you have today?
- Did you get a response or reaction (from other humans or other species)? And can you describe it?
- What do you feel?
- What was the most noticeable thing today? What drew your attention the most?

As a practical approach, journaling was conducted through a digital platform, specifically a WhatsApp or Signal group chat (based on the participant's preference), with both the researcher and the participant included. This ensured that participants always had their journal close by on their phones, along with the necessary information for activities, as the journaling prompts and list of activities were shared in the chat. Communication channels were also separated: the group chat was used for research data, while personal messages offered a private space for questions or concerns. Participants could journal using their preferred method (typing, sending pictures of handwritten notes, or voice messages), and they had a device to share pictures of wild urban nature, which was part of the journal activities. Additionally, the researcher sent reminders in the group chat to encourage participants to engage in the activities and submit their journal entries. For the ethics hereof, data were collected with permission of the participants through the digital platforms that the participants agreed to use.

4.1.3 Data analysis

The data analysis, derived from the interview and journal transcripts, is detailed in this subchapter. It primarily relies on the passionate immersion measuring framework, but additional metrics for triangulation are also employed, which are explained first. Following this, the data processing and interpretation methods are described, and finally, the code structure is presented as a conversion of the measuring framework.

4.1.3.1 Triangulation of data

To triangulate the data based on passionate immersion and value indicators, the participant's relationship with nature was also assessed using two additional metrics: the Image of Nature (Buijs, 2009a, b) and the Nature-in-Self Scale (Schultz, 2022; Van Heel et al., 2024). These were used to assess the participants' connection to nature through the interviews.

The **image of nature** was developed by Buijs (2009a, b) to map Western cultural ideas on what nature is and how it should be managed. It encompasses the interplay of values, beliefs, and value orientations to categorize the four different views of nature, developed by quantitative research on people in the Netherlands. Images of nature serve as an overview in this research of how people perceive more-than-human species and how they think they should interact with them (Buijs, 2009a, b, Table 10). Four types are defined:

1) **Wilderness image** focuses on the (symbolic) absence of human artifacts and sees nature as pristine and having (ecocentric) intrinsic value. there is a focus on autonomous processes of nature, but some people think small interventions are allowed to enhance them.
2) **Inclusive image** upholds a broad definition of nature and rejects the nature-culture divide.
3) **Aesthetic image** is focused on the function of the landscape as being suited to (hedonistic) recreation, therefore having to be beautiful, for which nature should be protected.
4) **Functional image** leans solely on utilitarian values of nature.

Table 10. Four images of nature in the Dutch context. Adapted from Buijs (2009a;b)

Ideal type of images of nature	Normative				Cognitive		
	Values	Value orientations		Definition of nature	Beliefs		
		Level of management	Goal of management		Nature-culture divide	Fragile-resilient	Balance-change
Wilderness	Ecocentric	Hands-off	-	Narrow	N ↔ C	Fragile	Balance
Inclusive	Biocentric	Limited management	Nature	Broad	N + C	Fragile	Change
Aesthetic	Weak anthropocentric	Limited management	Landscape	Very broad	N + C	Fragile	Balance
Functional	Anthropocentric	Hands-on	Agriculture/ Forestry	Very broad	N + C	Resilient	Change

The **nature-in-self scale** enables individuals to visually determine their relationship with nature (Van Heel et al., 2024), which participants of this research used it as a metric both before and after engaging in the Multispecies Safari, visualized in Figure 8. The scale's images place people in relation to nature as:

1. Separate yet related entities
2. Separate yet intertwined: one as part of the other
3. Indistinguishable: as one entity
4. Humans as part of nature
5. Nature as part of humans
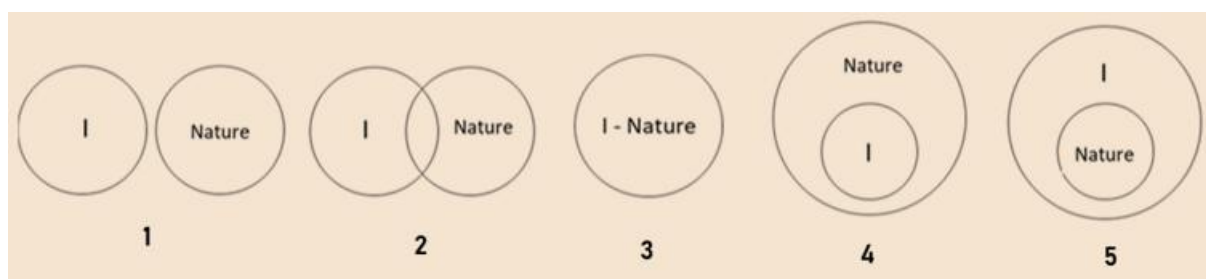
Figure 8. The Nature-in-self-scale, theorized by Schultz (2002), updated by Van Heel et al. (2023; 2024), visualizes how people see their connection to nature.

4.1.3.2 Data processing

The **interviews**, both before and after the Multispecies Safari, were recorded as audio files on the researcher's phone, transcribed using the built-in transcription tool in Microsoft Word, and edited by the researcher. The **journals** sent via Signal and WhatsApp were copied and transcribed into a Microsoft Excel file when necessary. This file included an overview of the journal entry date, weather, and responses to the journaling prompts. Both the transcriptions and the journals were then anonymized (names were removed, and occupations and locations of daily Multispecies Safari activities were generalized and stored securely, both in the OneDrive cloud and on the AtlasTI server of the researcher, to handle the participants' data ethically. Finally, the transcripts were deductively coded using AtlasTI, based on the code structure explained in the following subchapter.

4.1.3.3 Code structure

To answer the second subquestion, *"What kinds of value orientations toward wild urban nature emerge among participants before, during, and after engaging in the Multispecies Safari in their home environment in Amsterdam, based on passionate immersion?"* a code structure was established. This code structure included the measuring framework: the dimensions of passionate immersion (Van Dooren et al., 2016), intersecting with the plural valuation of wild urban nature (IPBES, 2022), as shown in Table 3 of Chapter 3.2. This table was then converted into a more visual coding structure, shown below in Figures 9 and 10. The contents remained the same as in the measuring framework; only the visual presentation changed.

4.1.3.4 Data interpretation

The interview transcripts and journals were analyzed based on expressions of the participants, in adherence to this code structure: in multiple ways:

1) **Direct coding:** it was noted whether participants answered the interview questions by highlighting instrumental, relational, or intrinsic values toward wild urban nature, as determined by the measuring framework. For example, if a person mentions "empathy", it was coded as such, or when a participant mentioned feeling "calm and peaceful", it was coded as 'emotional well-being'.
2) **Comparative coding:**
   a. Before and after the Mutlispecies Safari: noting a change in behavior or perspective in the interviews before and after the Multispecies Safari, especially related to the indicator 'care'.
   b. Quantitatively and qualitatively: a comparison was made both quantitatively (in terms of frequency) and qualitatively (in terms of content) before and after the activities.

Data was presented by displaying quotes (what the participant said), translated from Dutch when necessary, and explaining general patterns by noting who said what. Additionally, tables provide an overview of relevant data and numerous data points. Finally, the qualitative data was quantitatively represented by showing the number of quotations from each part of the data collection process (interviews before, journals, or interviews after), to offer a general overview.
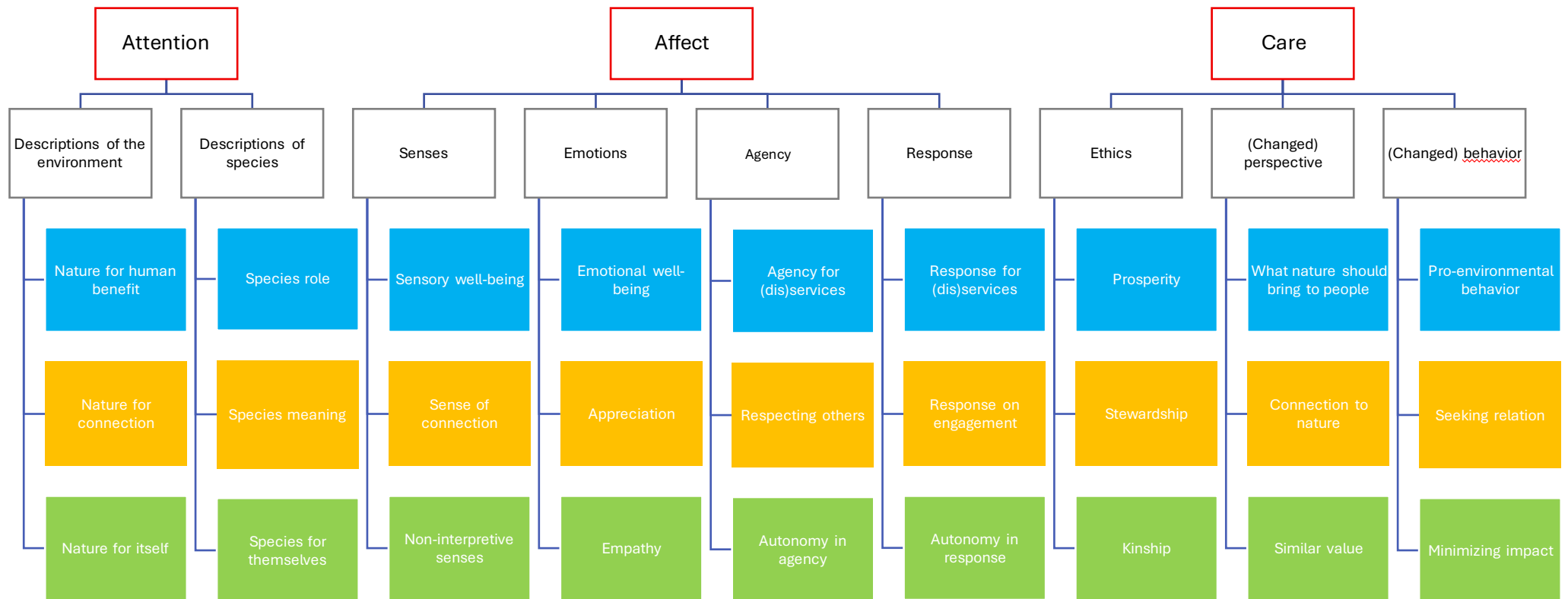
Figure 9. Code structure setup as a transformation from the measuring framework (same content, different visualisation). Blue is based on instrumental values, yellow is referring to relational values, and green is intrinsic
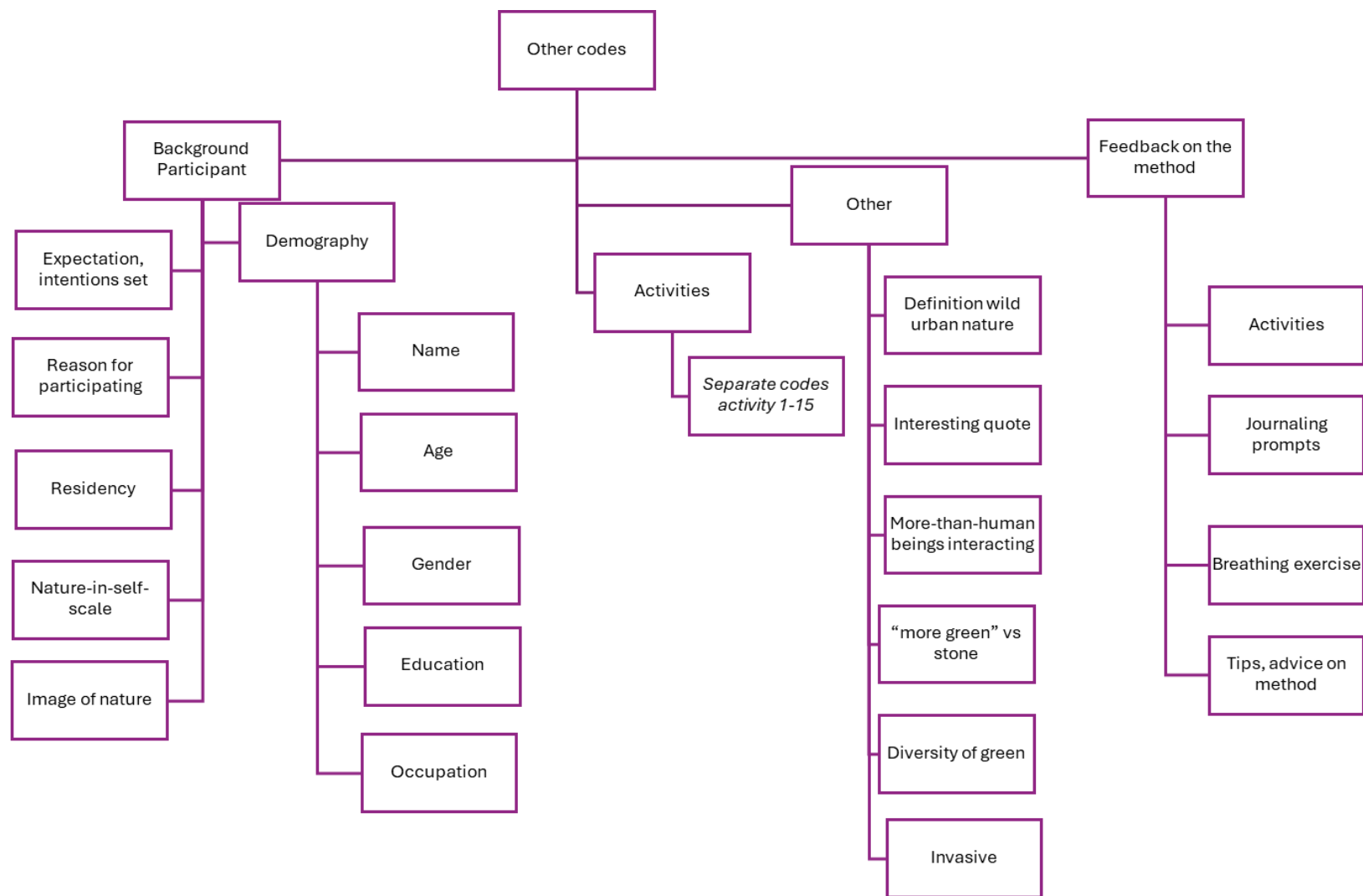
Figure 10. Code structure of other codes used.

4.4 Results: validating the measuring framework

This chapter highlights the results from the Multispecies Safari based, as documented in the journals and interviews conducted before and after the activities. This builds evidence around the second sub-research question: *"What kinds of value orientations toward wild urban nature emerge among participants before, during, and after engaging in the Multispecies Safari in their home environment in Amsterdam, based on passionate immersion?"*.

Overall, it is observed in the results that applying the measuring framework on the collected data showed that participating in the Multispecies Safari caused a shift from mainly instrumental and relational views of wild urban nature to a more diverse valuation among participants. This shift moved from a largely anthropocentric perspective to a broader range of value perspectives. Main outcomes regarding a shift in valuations of wild urban nature by the participants, before, during, and after the Multispecies Safari, were the following:

1. **Instrumental valuation = more before and during, than after the Multispecies Safari.** Urban nature was generally more instrumentally valued in the interviews before than in the journals and interviews afterwards. Wild urban nature was rarely mentioned in services for human benefit (this is better explained in point 5), nature in service was considered more controlled by humans, too. However, wild species were mentioned in relation to disservices (e.g., in 'response' from more-than humans like bird poo), or unwanted animals (e.g., in 'pro-environmental behavior' discussing rats when collecting trash). Per phase of the research, urban nature was expressed for human benefit in the following ways:
    - **In the interviews before the Multispecies Safari activities**, urban nature is most often instrumentally valued, over relational and intrinsic valuations. Especially the descriptions of urban nature in the environment are expressed in service to humans (e.g., in function for leisure, aesthetics, climate adaptation, or as a food source), and care for more-than-humans is seen as bringing prosperity to humans (e.g., human-managed urban nature for leisure), with less regard for the well-being of other species.
    - **In the journals during the Multispecies Safari activities**, sensory and emotional well-being derived from having nature in the city is often described in the journals as beneficial for humans (e.g., the visual pleasure of trees, the relaxing touch of grass, and the sound of birds). The sit spot (activity 1) fostered these feelings.
    - **In the interviews afterwards**, all indicators (attention, affect, and care) are still valued instrumentally, but to a lesser extent than before. In reflecting on the Multispecies Safari, participants mainly mentioned the (mental) well-being benefits derived from the experience. They also expressed more disservices (e.g., finding a rat in the kitchen). Participants still wanted 'more green' for human prosperity (e.g., flowers beautifying buildings).

2. **Relational valuation = in all phases of the research.** Relational values are often mentioned overall, but variability is found within each phase and for each passionate immersion indicator. Overall, through the passionate immersion indicator 'care', the relational value of urban nature was most present, as well as in relating to individuals more-than-humans. Illustrating this:
   - o **In the interviews before the Multispecies Safari activities**, participants often mentioned individual species (e.g., to live together with, their cultural meaning) and stewardship (e.g., actions they had already taken to care for more-than-humans), from a more anthropocentric perspective. Wild urban nature was also valued for its role in connecting with other humans there (e.g., in parks, gardens or wild nature in the streets).
   - o **In the journals during the Multispecies Safari activities**, participants especially valued wild urban nature relationally. For example, participants were more affected, especially when forming a relationship with more-than-human species they interacted with (e.g., a deepened sense of place and various degrees of response from more-than-human species). This was particularly encouraged by drawing their material connections (activity 4) and looking at the bark of a tree (activity 7). Participants also connected over wild urban nature together with other humans, for example, through activity 9 'talk about nature'.
   - o **In the interviews afterwards**, participants still reported wild urban nature frequently as having relational value. For instance, they showed increased care for other species, illustrated by many responses in changed behavior (e.g., wanting to be in nature more, lower threshold to engage with other species), and perspective (e.g., realizing the vastness of wild urban nature and tuning in to the rhythm of more-than-human species), but stewardship had changed from a largely 'humans as managers', to 'humans as responsible carers'.

3. **Intrinsic valuation = more during and after the Multispecies Safari.** Participants valued wild urban nature intrinsically less in general, but when they did, it was often related to agency, response, or when discussing individual more-than-humans, especially those that participants considered wild species. More details per phase of the research:
   - o **In the interviews before the Multispecies Safari activities**, wild urban nature was found important for biodiversity and to 'just be there' and grow outside of human influence, in a more abstract sense. Some participants intended to observe the environment and more-than-human species for their own sake, as a few had already done on occasion.
   - o **In the journals during the Multispecies Safari activities**, participants journaled about individual more-than-human species they encountered, often from an intrinsic value perspective, when they observed them for their own sake, or when trying to attune to them (e.g., in recognizing autonomy, agency, and response). The sit spot, both with and without eyes closed (activities 1 and 2), contributed to noticing the presence of others and attempting to attune to more-than-humans.
   - o **In the interviews afterwards**, participants approached the topic from a more reflective perspective, as they were more aware of the presence of other species and had developed an interest in their livelihood. However, most participants experienced a barrier in communicating with another species (further explained in point 6).

The outcomes per value indicator (results 1-3) are supported in the overview in Figure 11:
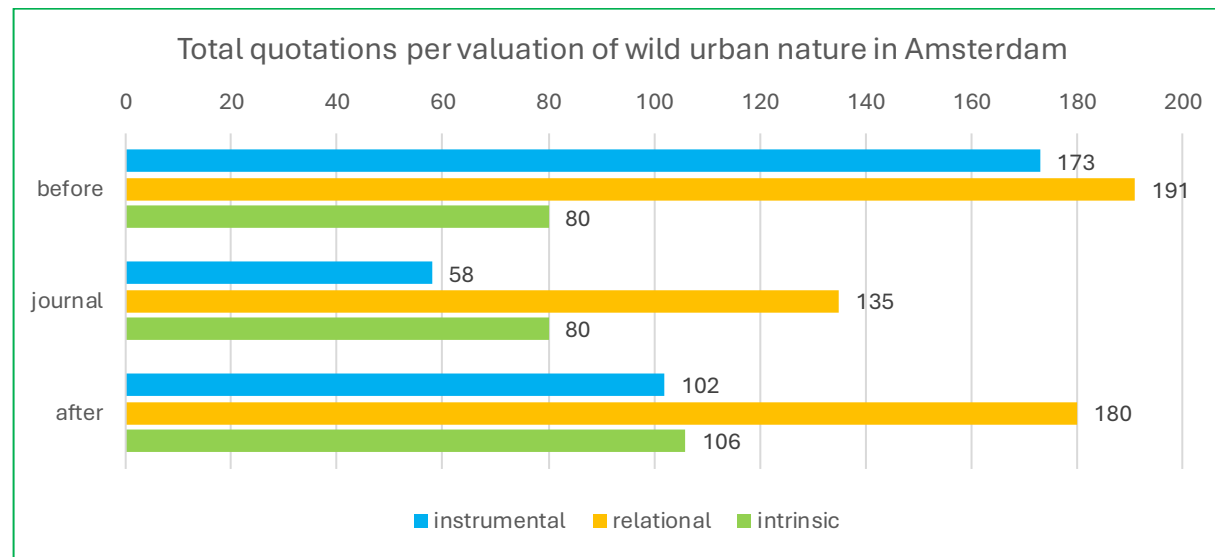
Figure 11. Absolute numbers of quotations per valuation of wild urban nature (instrumental, relational, intrinsic) by the participants in the interviews before, the journals during, and the interviews after the Multispecies Safari.

Overall, this Figure underscores the aforementioned results (points 1-3)[2]. Overall, it is visible that instrumental and relational values dominated the interviews before the Multispecies Safari. In the journals, relational and intrinsic values became more prominent. In the final interviews, relational values exceeded instrumental and intrinsic values, because instrumental values were less often mentioned, whilst intrinsic values were mentioned more frequently than before, though still not as often as the other valuations of nature.

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[2] The author is aware that this is a quantitative approach to qualitative research and data, however, it is interesting to have a visual overview, and some patterns still emerge.

Additionally, Table 11 presents the outcomes in more detail: per individual passionate immersion measuring indicator, the valuation in absolute numbers is presented, further underscoring the results of outcomes 1-3.

Table 11. Visual overview of all quotations from the transcripts in absolute numbers, with color scale indicating how often a measuring indicator was quoted (darker: more often quoted measuring point, lighter, less quoted).

Passionate immersion indicators		Instrumental	before	journals	after	totals	Relational	before	journals	after	totals	Intrinsic	before	journals	after	totals	
Attention	Descriptions of the environment	Nature for human benefit	55	2	18	75	Nature for connection	20	2	11	33	Nature for itself	10	5	9	24	
	Descriptions of other species	Species role	10	1	7	18	Species meaning	48	30	19	97	Species for themselves	12	22	12	46	
Affect	Senses	Sensory well-being	16	16	20	52	Sense of connection	13	24	21	58	Non-interpretive senses	4	18	7	29	
	Emotions	Emotional well-being	17	18	9	44	Appreciation	14	16	25	55	Empathy	0	1	6	7	
	Agency	Agency for (dis)services	19	8	13	40	Respecting others	23	4	14	41	Autonomy in agency	23	5	24	52	
	Response	Response for (dis)services	4	4	4	12	Response on engagement	1	23	12	36	Autonomy in response	13	7	22	42	
Care	Ethics	Prosperity	37	7	20	64	Stewardship	46	19	35	100	Kinship	10	6	6	22	
	Changed perspective	What nature should bring to people	15	2	15	32	Connection to nature	23	16	33	72	Similar value	4	7	10	21	
	Changed behavior	Pro-environmental behavior	5	1	7	13	Seeking relation	20	13	52	85	Minimizing impact	9	4	6	19	
			178	59	113	350		208	147	222	577		85	75	102	262	1189

Similar to Figure 11, it is evident that the number of quotations for **instrumental valuation** decreases in the journals and after the Multispecies Safari compared to the interviews beforehand, however this is different per measuring indicator: attention and care decreased heavily in the journals, while affect was also experienced instrumentally (especially sensory and emotional well-being). **Relational valuation** of wild urban nature was especially often mentioned in the interviews before through the cultural value of other species ('species meaning') and in relation to stewardship, yet this decreased in the interviews after (as mentioned in result 2). Participants also showed a different care ethic, especially transforming their perspective and behavior to be more in relation to nature. Finally, the **intrinsic valuation** throughout the Multispecies Safari increased, particularly for the points of agency and response instrinsic valuation is important. These nuances in individual measuring indicator frequencies are now further explained below.

Nuances in the testing of the framework are essential to highlight, as curious points arose during the process of coding the interviews based on the measuring framework (, Table 3). Main outcomes regarding the testing of the framework:

4. **Passionately immersing with wild urban nature through the Multispecies Safari increased participants' awareness of more-than-human life in Amsterdam.** As a starting point, participants already valued wild urban nature, as evidenced by their desire for 'more green' in their neighborhoods and their self-identification as 'indistinguishable from nature' or 'part of nature' on the nature-in-self scale, following the Multispecies Safari. Due to these activities, all participants reported feeling more aware of the wild urban nature around them and had a stronger sense of connection to it, which, in some cases, they wanted to develop further. Some participants were able to immerse themselves in wild urban nature with relatively many human influences (e.g., next to a busy road, focusing on non-human life), and others realized they needed a wilder environment with less human influence to feel relaxed, illustrated by the different trees found in Figure 12.

Figure 12. Trees at dusk. Photographed by participant 2, 8 and 1.

5. **Defining wild nature consistently was found to be challenging.** The various definitions are explained in <u>Annex 6.2</u>, primarily referring to nature that acts independently, is spontaneous, and is not influenced by humans.

   o **In the interviews conducted before the Multispecies Safari activities**, participants also emphasized that the location was self-determined; however, this became less important afterward. Urban nature (whether wild or not) was also defined in the interviews beforehand, which could encompass all life in the city, where some participants included humans and abiotic entities, while others did not. In contrast to wild species, planted species were also included. Some participants thought wild nature was only to be found outside of the city (or outside the Netherlands). See <u>Annex 6.3</u> for more on wild urban nature locations.

   o **In the journals during the Multispecies Safari activities**, some participants sent pictures of what wild urban species looked like (see Figures 13, and 14). These are mainly birds (pigeons and ducks) and plants (trees and flowers), which were also the most mentioned species in the interviews. Other species frequently mentioned included mice and rats, as well as smaller species such as insects, mosses, and aquatic life in general. Many species were not mentioned, especially those that are invisible.

   o **In the interviews afterwards**, participants described the definition of wild urban nature as encompassing a broader range of more-than-humans, including domestic animals and humans. Spatially, some participants had recognized non-wild nature as 'planned', and wild nature as 'unplanned' by governance bodies. Wild urban nature was found by almost all participants now in their neighbourhoods.

However, the Multispecies Safari and hence the experience of passionate immersion, was conducted with a wide range of urban nature, and in the interviews, there was no distinction made between wild and non-wild species when participants reflected on their encounters. Therefore, the results are about passionate immersion with **whatever participants considered wild urban nature.** In coding, expressions of agency or intrinsic valuations in general, the subject was often a wild species.
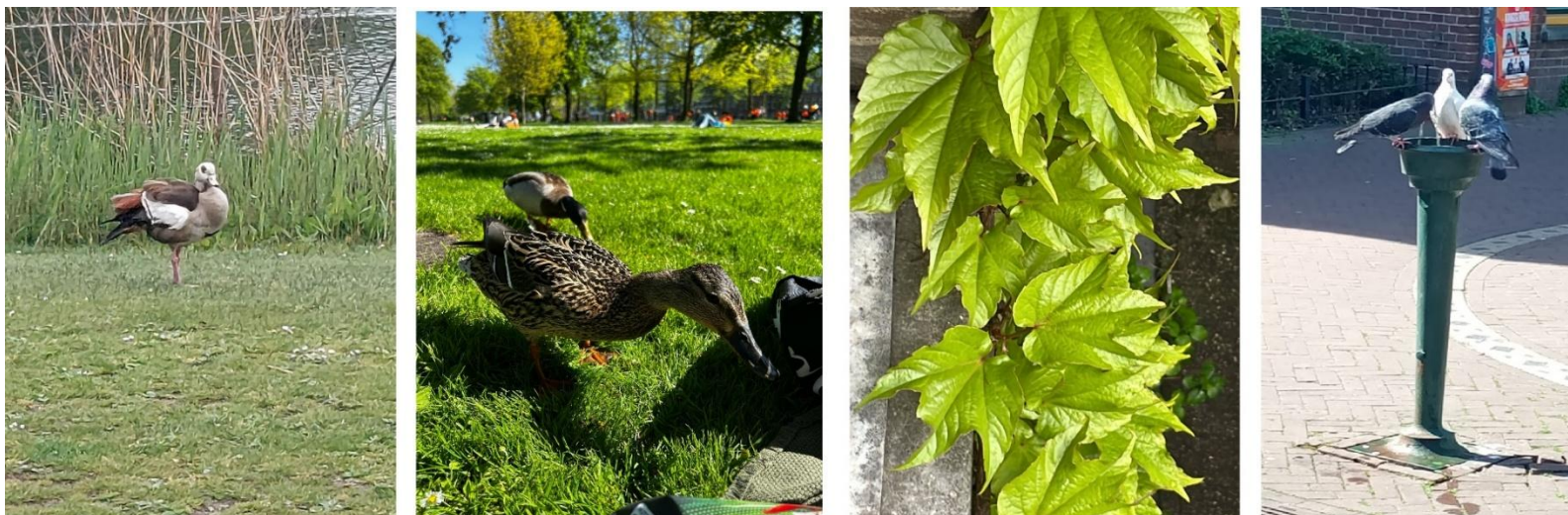
Figure 13. Wild urban species. Photographed by P2, 1, 11, and 3.

Figure 14. Also urban nature, however, less wild. Photographed by: P2, 12, and 6

6. **Participants found it challenging to understand and reflect on responses from more-than-humans and lacked the language to do so.** Participants were noticing more the reactions of other species to their behavior (e.g., listening to other species like birds, petting dogs, and noticing whether they liked it, or

   o **In the interviews before the Multispecies Safari activities**, response was often valued instrumentally, without attunement (not tried to be understood, e.g., fencing off the balcony to prevent pigeon poo). Some participants tried to let wild species go their way (e.g., let plants grow where they want in their garden).

   o **In the journals during the Multispecies Safari activities**, participants were asked to engage with wild urban nature and respond to the prompt, 'did you get a response from other species'. However, this question was rarely answered because participants did not receive a response or were uncertain whether they had received any response or reciprocal interaction (e.g., does a flower smell back? Did the birds respond to the human whistle?). A few participants did get responses from more socialized beings (less wild species, e.g., pets like dogs or a human greeting). One participant interacted with wild ducks that approached him, but he was unsure how to communicate with them and how the ducks perceived him. When describing responses, participants often used human language to describe the behaviors of other species, both in interactions with more-than-human entities and between different species (e.g., accusing seagulls of stealing food or narrating pigeons mating with human flirting expressions). This often reflected their attempt to see from the perspective of the more-than-human. Activities such as 'looking at another being closely' (Activity 5, see Figure 15 for exemplary outcomes: intricate studies of the landscape and individual species of plants) and 'being another being' (Activity 13) contributed to focusing on the response from others.

   o **In the interviews afterwards**, participants mainly reflected on their interactions with more-than-humans during the activities. Some continued to attribute behavior to other species based on human language. A few participants reported facing barriers in communication, particularly feeling that they lacked the right language to describe these interactions, and one participant outright refused to use anthropomorphic language to express this. Participants also struggled with imagining how other beings perceived them (e.g., do the house sparrows like me for feeding them?). However, some participants believed that there were no preconceived notions in wild species about interacting with humans (e.g., nature just happens, so it happens upon humans).

Shifting from the human perspective to thinking-with the more-than-human in interaction was attempted throughout the different phases of the research by the participants, but was found challenging overall. However, after noticing wild urban nature (as described in the journals or interviews afterward), participants attempted it more often.
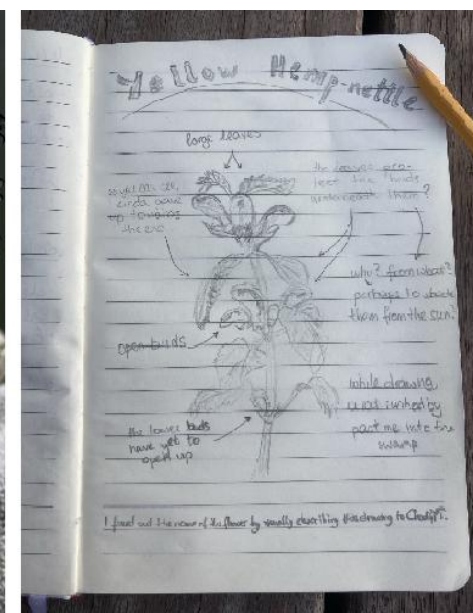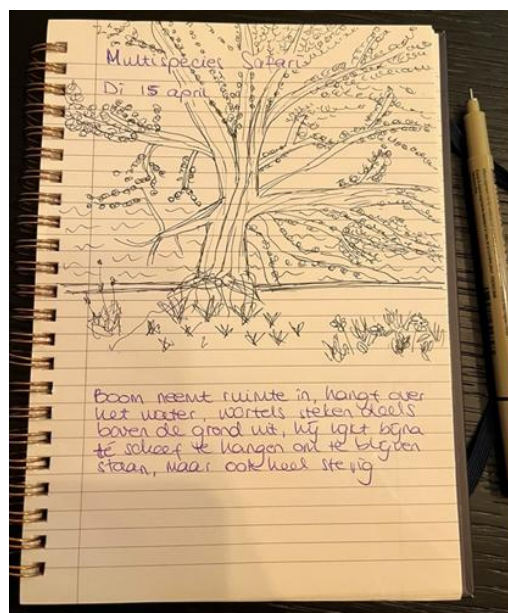
Figure 15. Journals of participants. Photographed by: participants 8, 6, and 14.

7. **The frequency of coded measuring indicators varied depending on the research phase, coinciding with the nature of the indicator.**
   During testing, some indicators were used more frequently to code participants' expressions, across different phases of the research (before, during, and after the Multispecies Safari) and depending on what the indicator pointed out. Illustrating examples:
   o 'Attention' was more often coded before and during Multispecies Safari activities, as participants were specifically asked about their environment and species during these phases.
   o 'Senses' and 'emotions' appeared more frequently in the journals when participants were prompted to describe their direct embodied experiences.
   o 'Response on engagement' (relational) was more prevalent during the Multispecies Safari activities as well, where immediate response was asked, whereas 'autonomy in response' (intrinsic) was more prevalent in the interviews after, when participants offered a more reflective perspective.
   o 'Empathy' was rarely coded but appeared mainly in reflective interviews afterward.
   o 'Care' also indicated transformative change, which is more prevalent in the interviews afterwards when reflecting on the past activities as well as future actions, however, 'ethics' was a more discussed topic before the Multispecies Safari, especially instrumentally and relationally. The intrinsic valuation of care was not coded often, possibly because these concepts were more abstract (e.g., 'kinship') or implicitly mentioned (e.g., 'similar value').
   o 'Agency' was rarely explicitly mentioned, but rather implicitly and thus coded based on whether participants saw a more-than-human species as an actor, by expressing an action undertaken by the other species. In general, wild species were more often considered actors than urban nature with species in it.

   Thus, the measuring framework generally applied well to the transcripts of interviews and journals, enabling an understanding of the observed shift in the valuation of urban nature. However, it also posed some challenges, as outlined above. More will be presented in the discussion (Chapter 5).

5. Discussion

The discussion works further on answering the main research question: *"To what extent does passionate immersion in wild urban nature in Amsterdam contribute to shifting values in human-nature relationships?"*.

Two steps were taken that answered the two sub-research questions:

1. **Operationalization:** the concepts of 'passionate immersion', 'values in human-nature relationships', and 'wild urban nature' were researched in literature and contextualized, leading to the operationalization of passionate immersion into a measuring framework that can track whether activities, based on the ideas of passionate immersion: the Mutispecies Safari, shift values in human-nature relationships.
2. **Validation:** The Multispecies Safari was carried out by participants as a way of validating the measuring framework by tracking a shift in human-nature relationships, as well as testing whether the measuring framework suits its purpose.

This chapter discusses these two steps together, what was revealed, and the limitations identified. It then reflects on the researcher's position and the relevance for knowledge users.

5.1 Main findings

Here, the main findings from the operationalization and validation of the measuring framework are presented.

5.1.1 Findings in relation to theory

The measuring framework is set up as an exploratory approach to operationalize philosophical texts, on passionate immersion (Van Dooren, et al., 2016; Tsing, 2010), and supporting literature on affect (Haraway, 2008; Lorimer, 2015; Latour, 2004), agency (Latour, 1993, 1999; Keulartz, 2023; Veldman, 2018), and ethics of care (Haraway, 2016; Puig de la Bellacasa, 2017). The aim of passionate immersion is to foster attentive, affective interactions with more-than-humans that lead to careful response, initially as a way to move away from objective science dominated by the nature-culture divide (Tsing, 2010), but also so that humans can recognize their entanglement with all the other species around them in their environment (Van Dooren et al., 2016). The measuring framework was then designed as an exploratory, integrative tool to observe this shift away from anthropocentric thinking towards more relational, pluri-ecocentric valuations of more-than-humans that recognize their agency and thus value them intrinsically as well. In this thesis, as a reaction to the dominant instrumental valuation of urban nature in planning (Edwards et al., 2023; O'Connor & Kenter, 2019) by researching how wild urban nature can be recognized for its intrinsic value (Bonthoux & Chollet, 2023; Büschner & Fletcher, 2019) and relational significance (Chan et al., 2016; O'Connor & Kenter, 2019; Richardson et al., 2019; Soga & Gaston, 2016). Hereby novel in its integration of posthuman thought into a value framework.

By coding journals and interviews for attention, affect, and care with participants who immersed themselves in wild urban nature through a Multispecies Safari, the measuring framework effectively captures a shift. This shift is indicated by a decrease in quotations emphasizing

instrumental valuations of wild urban nature and an increase in quotations that value nature intrinsically, while participants consistently valued wild urban nature relationally throughout.

The results of the Multispecies Safari support those of Van Heel et al. (2024), who also noted increased awareness of urban nature and greater emotional and sensory engagement among participants who connected with nature. Like Van Heel et al. (2024), this study found that participants wanted to spend more time outdoors after the activities. However, consistent with the gaps identified in nature connectedness research (Richardson et al., 2019; Ives et al., 2019; Van Heel et al., 2024), participants faced reciprocity challenges, experiencing a language barrier when attempting to perceive responses from more-than-humans (O'Connor & Kenter, 2019). As Soga and Gaston (2016) warn about the 'extinction of experience' caused by limited nature contact, this research suggests that fostering emotional bonds is achievable and that developing a deeper mutual understanding between humans and more-than-humans deserves further study. An more accessible version of posthuman theory (Haraway, 2016; Tsing, 2015)like this research of future iterations, presents opportunities, as demonstrated here and in recent works by Butler and Richardson (2024).

5.1.2 Triangulation of data

Triangulating the data supports the findings that participants primarily valued nature relationally. First, the nature-in-self scale (Van Heel et al., 2024) shows that while many initially felt 'indistinguishable from nature' or saw humans as 'part of nature', after the Multispecies Safari they more often identified as 'part of nature' but recognized themselves as distinct entities, reflecting a deeper awareness of their entanglement with more-than-humans now that they reflected on their ties to their enviornment. Second, using Buijs's (2009a, b) image of nature typology, participants with a 'wilderness image' initially thought wild nature was absent in Amsterdam, but later reported in encounters with wild urban species like rats or unexpected diversity of others, that they recognized their agency, like the animals in nature documentaries. This suggests that Lorimer's (2015) concept of aesthetic charisma helped participants perceive everyday urban species as spectacular too. Meanwhile, those with an 'inclusive image' of nature became even more inclusive after discovering new species, valuing interrelatedness and striving for more pluricentric thinking, echoing Buijs's (2009a, b) findings. The triangulation of data thus also demonstrates that the Multispecies Safari, through passionate immersion, effectively encouraged participants to shift from predominantly anthropocentric views toward more relational and ecocentric valuations of wild urban nature by being more aware of the more-than-humans living around them, supporting the validity of the measuring framework in capturing these changes.

5.2 Limitations

There were also some limitations encountered in operationalizing passionate immersion within the measuring framework. First, in setting up the measuring framework with the integrative literature review. Second, with the validity of the framework itself. Finally, with the testing of the framework through the Multispecies Safari. Since this study was novel and exploratory, its limitations highlight areas for improvement in future iterations of similar research, which is particularly valuable for the type of research undertaken. These limitations are thus discussed in more detail.

5.2.1 Limitations of setting up the measuring framework

Limitations experienced with setting up the measuring framework were the following:

- **Operationalizing philosophical text.** Since passionate was not a formal 'method' (Van Dooren et al., 2016), but rather a multispecies approach to ethnographic research (Van Dooren, 2017), it was explored by taking the text literally. However, questions rose during operationalization, like should such a philosophical text be operationalized at all? And if so, how can this be done without flattening its conceptual richness? These are ponderings for future research.

- **Using value as an indicator.** The IPBES (2022) offers instrumental, relational, and intrinsic categories, but its anthropocentric design raises questions about intrinsic value as potentially a human projection. This paradox challenges the link between multispecies philosophy and environmental policy language. For future research, the now supporting Life Framework of Values framework by O'Connor & Kenter (2019) could be explored as a substitute for the three values currently used, to incorporate the philosophy of science by Latour better (1993, 1999) and Haraway (2008).

- **Limited literature on the valuation of wild urban nature.** Literature explicitly valuing wild urban nature, especially its intrinsic values, is limited. Most articles found (See Chapter 3.1.2 Literature selection) focus on a general 'what do you value about nature' and categorization based on the IPBES (2022) as a diagnostic key was now done manually. Thus, following the call by Bonthoux and Chollet (2024), in the future a systematic literature review migth be helpful deeply scope literatures on key terms like values (especially intrinsic values), and configurations around wild urban nature, similar to Pineda-pinto et al. (2023) and Rupprecht and Bryne (2014).

- **Subjective bias in selecting articles**. A drawback of the integrative literature review is its potential bias due to the iterative, interpretive approach guided by the researcher's judgment and the identification of research gaps (Cronin & George, 2020). While this allows for interdisciplinary insights, it limits replicability due to the absence of a formal selection process. Iterations of the framework also happened whilst already coding the transcripts, to sharpen further meanings and wording of indicators (e.g., adding disservices to services), where then the validation material also influenced the outcomes. Also, here, a systematic literature review can be recommended, as well as a

tool (an online note-taker like MIRO or Roam) can support tracing steps in the decision-making processes of selecting papers.

5.2.2 Limitations in the validity of the measuring framework

In validating the measuring framework, room for improvement is discovered:

- **Issues with individual measuring points.** Some configurations of value indicators with the passionate immersion indicators are ill-fitting, for instance, they are too broad or too narrowly defined, as stated in result 7. Examples of problematic measuring points are:
  - 'Non-interpretive senses', participants being present in the environment without centering themselves, in their sensations, has a substantial overlap in quotations with 'species for themselves', where participants observed other species for the sake of it, as a mode of thinking-with. Comparably, 'similar value' as an intrinsic valuation perspective could also be seen as a mode of thinking-with, especially in the reflective interviews afterwards, as it involves a shift into a pluricentric mindset, e.g., centered around the thought' humans are not alone, what do others need?'
  - In 'affect', the measuring points 'emotions' and 'senses' are strongly interlinked, as found in participants' expressions.
  - 'Respecting others' for cohabitation was a topic that most participants reflected on, however implicitly, and therefore this measuring point is not often recorded in the interviews or journals, and thus might be missing in the coding.
  - 'Empathy' was too narrowly defined, it was only coded when specifically stated, which was not often. Whilst it was based on Basak et al. (2022), who found that participants developed empathy as a care act for urban wildlife, not many participants in this research explicitly stated that they felt empathy.

  These measuring points require revision in a future iteration of the framework, for example, by better integrating and defining posthuman thought into the intrinsic valuations of urban nature, although the author has not yet found relevant papers on this topic. Moreover, the framework addresses both observable actions (behavior) and people's internal ideas (beliefs), making them inconsistent 'units of measurement'. In future iterations of the framework, this structure may be reformulated into either actions or ideas for better compatibility.

- **Measuring positive interactions.** Most measuring points focus on positive interactions between humans and more-than-humans. Only 'agency' and 'response to disservices' are designed to capture negative interactions from the transcripts, which they barely did. While most studies in theory concentrate on human-wildlife conflicts (Basak et al., 2023; Rupprecht et al., 2017; Soulsbury & White, 2015) and the literature thus rarely addresses non-conflictual human-nature interactions, this study demonstrates significant potential for further research in this area. From a care ethics perspective, it would be valuable to explore human-wildlife conflict further or consider a multispecies view on the humanistic ideas of good and evil, e.g., by asking, 'can a more-than-human do wrong?'

- **Bias in interpreting data and applying the framework to transcripts**. Attempts to classify statements as expressing instrumental, relational, or intrinsic values were sometimes presumptuous rather than empirical. Participants did not always use the terms precisely as defined in the measuring framework, leaving interpretation to the researcher. Moreover, some responses appeared descriptive rather than value-laden, yet were still included. This raises questions about the validity of using values as measurable outputs without participant validation or co-interpretation. In the future, the use of this measuring framework in the coding phase will require additional iterations by other researchers to support clarity and eliminate bias.

5.2.3 Limitations of the Multispecies Safari

There are several critical points to be noted that may have influenced the process and outcomes of the Multispecies Safari and should be addressed in further research.

- **The sample of participants.** This influenced these outcomes. All 15 participants were self-selected, were younger, and more theoretically educated. Additionally, most participants expressed a preference for cohabitation with more-than-human species, as indicated by all participants stating they want "more green" in their neighbourhood, as well as almost all participants regularly visiting parks. This may have potentially biased the results toward those already inclined to engage, making the findings uniquely applicable to this group of participants but not representative of other people living in a Western city like Amsterdam. However, the explorative goal of this research is thereby not impaired, as it was aimed to operationalize passionate immersion.

- **More-than-human species included in this research**: Most species noted by participants were visually easy to see species, like plants (trees, flowers), or heard, like birds, meaning many urban species were literally overlooked. This reflects Lorimer's (2015) ecological charisma, which suggests that species need to be visible to be perceived. Additionally, the 'pigeon paradox' by Dunn et al. (2018) highlights how human attention biases us toward obvious, culturally familiar species while ignoring less noticeable but ecologically important urban wildlife. Although the Multispecies Safari encouraged participants to notice a greater diversity of species and used the term wild nature to challenge them to explore new species (albeit this caused some confusion, see result 5), the most obvious to perceive species were still named most often. It might be interesting in the future to map out inconspicuous wild urban species, in addition to the local native fauna interacted with, as for example outlined by Rupprecht et al., 2017 and Basak et al., 2023., for an international comparison.

- **The longevity of the research** also poses a limitation. Previous studies engaged participants in passionate immersion for months (Bisshop, 2025; Morrow & Davies, 2021) or even years (Dollin, 2020; Vurdelja, 2023; Tsing, 2010), whereas Van Dooren et al. (2016) offer no clear timeframe, Richardson et al. (2019) suggest shorter interventions should also be effective. This study invited participants to immerse themselves in wild urban nature over two weeks, aiming for around 10 minutes daily. However, 9 of 15 participants did not complete more than five activities, citing time constraints despite initial enthusiasm. Some activities, particularly 'talk to another person about nature, were done but not journaled. While no clear correlation emerged between participation level and value shifts, limited engagement likely diluted the depth of the findings. This suggests that expecting a short, two-week intervention to change anthropocentric views to pluricentric worldviews might have been too optimistic. However, the results show signs of a shift, and all participants reported noticing nature more.

- **Language as a barrier.** This study was heavily language-based (Richardson et al., 2019; Lumber et al., 2017; Van Heel et al., 2024), but communicating multispecies concepts to participants sometimes proved a challenge. Language-based activities like 'move like another being' or 'incorporate nature's voice' aimed to support ecocentric thinking (Haraway, 2016; Van Dooren et al., 2016), sometimes confused participants. Similarly, the term 'wild urban nature' proved ambiguous, as many equated it with any type of nature (see result 5), or the absence of humans, and thus paradoxical to use in the city, as Sarabi et al. (2023) warn. Next time, an existing predetermined definition can be used, like 'rewilding, a term fairly well defined in literature (Bonthoux & Chollet, 2024). Additionally, some participants were confused about the instructions for daily activities and the required choice activities (see Chapter 4.1.1.5), or submitted journals unrelated to the prompts. This underscores the need for more precise terminology and clearer instructions in future research.
Furthermore, the transcripts revealed that language was inhibiting expression from participants (see result 6), who struggled to articulate responses or rejected anthropomorphic phrasing. Relying on interviews created barriers to expressing intrinsic valuations, as participants lacking the vocabulary may have underrepresented these perspectives. O'Connor & Kenter (2019) discuss the challenge of articulating intrinsic values, as intrinsic values are also defined as independent of people as valuers (IPBES, 2022), and thus confirm the barrier that comes with expressing intrinsic values. They suggest arts-based methods as a way to go beyond language as a medium for expression. Haraway (2016) adds that embodied, sensory communication can express more-than-human relations beyond words, which suggests further research into more-than-human semiotics, such as Bisshop's (2025) spider vibes, and what kind of everyday language better fits the intrinsic valuations of nature by humans, if at all.

- **Data consistency**. Semi-structured interviews introduced variability, with some questions being skipped or forgotten, resulting in missing data, like participants' favorite activities or future visions. Participants' intentions set in initial interviews were not consistently revisited due to time constraints and evolving interview guidelines. Future research could benefit from streamlined, core questions to ensure consistency. Additionally, qualitative research inherently carries biases, including the influence of the interviewer. To mitigate this, findings were triangulated with established scales like the Nature-in-Self (Van Heel et al., 2024) and Image of Nature (Buijs, 2009a,b). Regarding materials, some participants preferred analog journals to avoid phone distractions, while digital group chats allowed convenience, e.g., through voice notes. Offering both formats in future studies could enhance inclusivity.

Despite this, the research offers valuable exploratory insights into how passionate immersion with wild urban nature can be operationalized and tested out through having participants engage in more-than-human life in the city. It is emphasized again that the measuring framework is novel and represents a first attempt to understand whether people transition from an anthropocentric to a more ecocentric valuation of nature through passionate immersion, which it has proven to do.

5.3 Self-reflection

A critical reflection on my role as a researcher reveals several important limitations and biases that may have shaped the research process and outcomes.

First, I acknowledge that my own relationship with nature is deeply influenced by my Western Christian heritage, which often leads me to view myself as superior to nature and perceive it as serving my needs, for example, prioritizing domination over animals under the guise of stewardship. Therefore, this research was an exciting learning experience for me as well, and it likely also influenced how I approached and interpreted the concept of wild urban nature. For example, during the interviews, I often used the word "nature" as something external to the human, thereby unintentionally reinforcing an anthropocentric divide I was aiming to challenge.

Then, the research process I designed was also highly iterative due to the levels of complexity and the time constraints I put on myself. Much of the early design was guided by intuition and evolving insights rather than a firmly grounded methodology. For example, the interview guidelines were developed before the theoretical framework had fully crystallized, and I did not personally complete all of the activities before distributing them to participants. While the outcomes of the interviews were sufficient to test the framework, and the clarity of the exercises appeared adequate, based on participants' journal entries, taking more time for these steps could have helped gather and provide the correct information.

Finally, I acknowledge a strong personal bias and enthusiasm for wilder forms of urban nature, which may have inadvertently influenced participants. This includes the potential for normativity in my language, unintentional steering of interview questions, or setting expectations that participants may have picked up on, whether consciously or not. These factors underscore the importance of reflexivity in qualitative research, particularly when investigating the value-laden topic of multispecies cohabitation.

5.4 Relevance for knowledge users

Urban planners, decision-makers for environmental policy, or any other actor involved in city-making with more-than-humans, could use this study as an inspiration to adopt a multispecies lens in their practice for true sustainability.

The measuring framework could be used as the IPBES (2022) describes, to expose one's presupposed valuations of urban nature and open up the conversation for a more pluricentric valuation. Furthermore, the framework's strength lies in its ability to translate philosophical concepts (e.g., agency, learning to be affected, response-ability) into observable, comparable data points, allowing more pluricentric valuations of human–nature relationships. This demonstrates its suitability as an exploratory tool for assessing urban nature from a multispecies approach. Additionally, the activities can be carried out by anyone who wants to engage with the natural world around them - they have received positive reviews!

6. Conclusion

This thesis set out to explore the question: "*To what extent does passionate immersion in wild urban nature in Amsterdam contribute to shifting values in human-nature relationships?*"This question is answered here.

6.1 Conclusion

By developing and validating a measuring framework based on indicators of attention, affect, and care (Haraway, 2008, 2016; Puig de la Bellacasa, 2017; Tsing, 2010, 2015; Van Dooren et al., 2016) and connecting with instrumental, relational, and intrinsic values (IPBES, 2022; Mansur et al., 2019), this study demonstrates that passionate immersion in wild urban nature can indeed trigger a shift toward more diverse valuations.

Based on interviews and journals from 15 participants who explored Amsterdam's wild urban nature through a Multispecies Safari and activities focused on passionate immersion, the findings reveal an increased awareness of more-than-human co-inhabitants. This fostered stronger feelings of connection to nature and strengthened relational values (echoing (Richardson et al., 2019; Van Heel et al., 2024). Participants initially relied on instrumental and relational values. However, after the activities, they expressed a broader range, with hints of intrinsic appreciation emerging, although intrinsic values remained challenging to articulate, as also found by O'Connor & Kenter (2019).

The measuring framework successfully captured this shift by focusing on attention, affect, and care, though some limitations were identified. Participants struggled to define their affective responses toward other species and to adopt the perspective of other beings for 'thinking-with' others (Haraway, 2016). While participants initially defined wild urban nature as 'outside of human influence', during the Multispecies Safari, participants engaged with various types of urban nature, mostly recognizing its wildness and consequent agency during later reflections on their encounters in interviews afterwards. In this way, the valuation results include all urban more-than-humans encountered, primarily based on visual and auditory perceptions, especially trees, plants, and birds.

Overall, this thesis introduces a novel approach to operationalizing passionate immersion as a practical measurement tool. It offers empirical, location-specific evidence showing that even brief immersive experiences can lead to a shift from primarily instrumental or relational perspectives on urban nature to more diverse and richer valuations.

6.2 Avenues for future research

Based on the current findings, suggestions are made for future research. These are directed towards developing the research through different theoretical lenses, in a more practical urban planning setting, or with a different setup of the current research.

Different theoretical lenses could be taken:

- **Transition theory**: This theoretical lens could position this research as a shift in values towards wild urban nature as a niche intervention within a larger socio-ecological transition towards a more ecocentric regime of urban planning, thereby tackling the dominant urban greening paradigms.

- **Delving into thinking-with***: Further operationalizing posthuman theory, the intrinsic valuation of urban nature can be explored in more depth by providing tools to shift from the human perspective to the more-than-human. In the current study, participants often defaulted to describing more-than-human behaviors in human terms, but they also felt awkward about it. Therefore, new methods, such as multispecies co-creation or multispecies languages, can be developed to represent more-than-human agency more effectively. Birds were identified in this research as recognizable free agents, and could be considered a focal point for research to think through and with. How do birds view human urban dwellers?

The thesis can also be further explored in a more practical urban planning setting:

- **Scenario planning:** As a world-building activity, humans and more-than-humans could imagine their desirable urban futures, based on the plural valuation of the Natures Futures Framework by Pereira et al. (2020), as initially intended for this study. While values in this research were used as a heuristic, future research could explore values through more future-oriented, multispecies methods, such as storytelling, relational narratives, or affective mapping, to develop scenarios of careful cohabitation.

- **Decommodifying private gardens:** In the Netherlands, a large part of urban green space available is a private garden, and rather than creating a biodiversity hotspot, people are increasingly choosing to have it as an extension of their living room by tiling the garden shut (Ottow, 2025). Applying the method of passionate immersion in people's own backyards may raise awareness of the other species that depend on these spaces, and reimagining their gardens as spaces for multispecies coexistence and co-shaping rather than for aesthetic or property value. Here lies potential to give body to a multispecies commons, the garden as a spatial common good for multiple species, and redefine human stewardship, for example by asking yourself 'how does learning to be affected by the garden change your position in the garden as a human in relation to other species?'

Also, improvements in the setup of this research can inspire further research:

- **Intersectionality:** The current participant group lacked demographic diversity, particularly in socio-economic background and cultural ideas. As values and access to green space are often tied to broader systems of privilege and exclusion, further inquiry should investigate how factors such as race, class, gender, and housing status shape motivations and capacities for engaging with wild urban nature. Additionally, exploring how business interests or political ideologies influence attitudes toward rewilding can reveal deeper structural barriers and opportunities.

- **Location:** The capital city of the Netherlands, Amsterdam, serves as the context for this research, also playing a distinctive role. As a progressive, dense, and relatively green city, it represents a unique urban ecology that is not necessarily generalizable to other places. Future research might compare responses along an urban–rural gradient or examine multiple world cities to better understand the spatial and cultural context in which values held towards wild urban nature are shaped.

These suggestions will develop the base of passionate immersion, the indicators of attention, affect, and care further in their potential to build human-nature relations, generate multispecies reciprocity through agency, and contribute to a human mindset shift from anthropocentric towards pluri- and ecocentric thinking, and careful cohabitation.

Resources

A

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Glossary

A short description of key term discussed in this thesis

Term	Explanation for this thesis	Source
Affect	The multisensory experience that is unconsciously translated in the body, in advance of thought, into feelings and emotions experienced in embodied encounters	Lorimer, 2015
Agency	the concept that agents (beings, life forms) are capable of acting by themselves	Latour (1993)
Anthropocene		
Anthropocentric worldview		
Assemblage	"The assemblage is the material ecology of bodies, technologies, texts, and other materials through which knowledge is produced and ordering takes place. Assemblages allow certain actors to speak for, commodify, govern, and thus shape the world, often in conflict with other representations."	Lorimer, 2015, p.10
Attunement	Listening with the body, being open to the correspondence of the environment as a way of communicating and listening to other-than-words	Bisshop, 2025; Lorimer, 2015
Becoming-with	Becoming is always becoming-with, meaning that one cannot exist in the world as a sterile being, but is always affected and shaped by its situated knowledge and environment	Haraway, 2008
Care	Responding to others through ethical and relational actions. It is material, as vital doing; relational, as an affective state; and political, as an ethico-political obligation to act for shared futures.	Lorimer, 2016; Puig de la Bellacasa, 2017
Ecocentric worldview	Nature and natural processes are central to the worldview, nature is mainly valued intrinsically	IPBES, 2022
Entanglement	Interdependent, interrelational being. all beings (both biotic and abiotic) exist in relational entanglements and mutually influence each other's environment in modes of world-building, multispecies shaping of cities, not only through human effort	Haraway, 2016; Tsing, 2015
Intrinsic value of nature	Nature has value in and of itself without human intervention, and preserving nature's diversity and functions is of primary importance.	IPBES, 2022
Instrumental valuation of nature	Nature is primarily valued for the benefits that people derive from it, which could lead to an optimization of multiple uses of nature.	IPBES, 2022
More-than-human	How humans are already entangled with the myriad of other species present in maretial world of which they are part - "The broad commonwealth of earthly life as a realm that manifestly includes human culture [..] but which also (necessarily) exceeds [is more than] human culture"	Abram, 2024, p. 314

Multispecies studies	Multispecies studies offer a decentered, inclusive lens on human and more-than-human cohabitation, challenging the dominant anthropocentric, instrumental perspectives on urban nature as described earlier, by recognizing the agency and intrinsic value of more-than-human beings	Maller, 2021; Van Dooren et al., 2016
Passionate Immersion	paying close attention to more-than-human species and understanding response, which is both how your human world makes sense of the interaction based on values, as well as understanding what the more-than-human is trying to tell you by taking them seriously	Van Dooren et al. 2016
Pluricentric worldview	There is no real center (nature or human) to the worldview, nature is mainly valued relationally. Also called a relational view of the world.	IPBE, 2022; O'Connor & Kenter, 2019
Relational valuation of nature	Humans are perceived as an integral part of nature, and therefore what is valued is the reciprocal character of the people-nature relationship and how nature gives sense to people's existence and identity.	IPBES, 2022; Locke & Münster, 2015
Response-ability	Response-ability is the capacity to listen and respond to more-than-humans through situated, attentive relationships. It aims to act constructively in relation to their needs and flourishing, engaging collaboratively rather than imposing human-centered perspectives.	Haraway, 2008; Keulartz, 2023; Paulson, 2019
Thinking-with	Engaging collaboratively and attentively with more-than-human others, recognizing their perspectives and agency rather than imposing human-centered views.	Haraway, 2016
Urban rewilding	Aimed at enhancing biodiversity and human-nature connections in cities by allowing ecological spontaneity and reducing maintenance interventions. In this approach, agency for both humans and more-than-humans is respected, and rewilding is about the dynamic interactions between all agents	Bonthoux & Chollet, 2024; Jepson et al. 2018 Ward & Prior, 2020
Value	"Representations of what people and society care about and what they consider important in relation to nature"	IPBES, 2022, p. 8
Wild urban nature	Spontaneous forms of urban nature that emerge and exist with little or no human control, e.g., as self-seeded plants or feral opportunistic animals, as a result of dynamic ecological processes, rather than of human design.	Carver, et al., 2021; Kowarik, 2018; Zeng & Scott, 2025

Annexes

Annex 1. The Amsterdam context

The research unfolds in an urban context. A city where the importance of urban nature has great public support is Amsterdam, the Netherlands. Here, it is argued what this public support looks like and why it is important as a fertile seeding ground for explorative research like this.

Annex 1.1 Policy

From a policy perspective, in the municipalities' new environmental vision report for 2050, the municipality wants to green up the city 'rigorously', by prioritizing quality and diversity: making urban green more accessible for Amsterdammers, but also by keeping urban nature in wild and quiet spaces (Municipality of Amsterdam, 2021). The municipality values urban green for its social well-being, health, climate adaptation, and nature (Municipality of Amsterdam, 2024). Also on the national level, policy is geared towards more interactions between humans and nature by having citizens take a more shared responsibility for nature management (e.g., through supporting citizen initiatives in public urban green spaces) (Bredenoord, et al., 2020). However, these approaches are still human-centered, and outside of the goal to 'better biodiversity' take other species' well-being not into account in their narrative.

Annex 1.2 Social Geography

From an urban planning point of view, there is less space for nature. This is due to the densification of Amsterdam, as limited space and strict zoning of the city result in infill developments following the compact city model. In general, this means a larger tension in space allocation for urban nature, with urban green spaces often losing out to economically more profitable offices or housing (Balikçi, et al., 2021). The reaction to fewer green spaces in Amsterdam has resulted in greener streets created by citizens (e.g., people putting plant pots on the streets or planting climbing plants) (Meershoek, 2024). From a social point of view, this behavior indicates the existence of a commitment of inhabitants to urban nature and thus a treasure of situated local knowledge. Also, a denser urban fabric intensifies multispecies interactions (Basak, et al., 2023). In a research inquiry into nature views of green citizen initiatives in Amsterdam-East, most participants value aesthetics of urban green the most but have a wilderness nature view, meaning that nature is a holistic entity, for which autonomy and as little human impact on nature is important (Bulten, et al., 2017). This is in line with national research where 80% of Dutch people state that they feel very close to nature, and see nature as the base of life (Van den Berg, et al., 2021).

Annex 1.3 Including the more-than-human in business

urthermore, from the perspective of ecocentric and pluricentric business activity, Amsterdam houses interesting initiatives that try to operationalize a more-than-human society, such as The Embassy of the North Sea, founded in 2015 in the local Amsterdam zoo, Artis (Van Valkengoed,

2015; Mommaas, et al., 2017). This 'parliament of things' as envisioned by Latour, has as a mission to listen to the North Sea and imagine and represent it as a political agent (ambassadevandenoordzee.nl/over/), and as an entity in itself. From here, the Zoöp organizational model emerged, that takes into account the more-than-human voice in business (Pedroso-Roussado, 2025). An example of a Zoöp is the research institute Waag Futurelab, based in Amsterdam, that participants of this research work at. Also in debate centers like Pakhuis de Zwijger and De Balie, a multispecies urban nature is often a topic of public discussion, with themes like a pigeon-friendly city, nature-inclusive spatial development, and tensions between the planned and spontaneous city (dezwijger.nl/agenda), however, not all Amsterdammers visit this. Other citizen initiatives that try to mend human-nature relationships and address the urgency of urban biodiversity loss are *De Ontheemtuin*, a moving garden of lost nature (ontheemtuin.nl), *De Onkruidenier*, an advocate of many values of weeds (wildonkruidenier.nl), and *Wilderland,* tea and soda brewers from weeds (wilder-land.com/pages/over-ons).

Annex 1.4 More-than-human ecology

Finally, from the behavior of nature itself, the unique biotopes found in the built-up area of Amsterdam have led to it being a biodiversity hotspot for plants (Sparrius, 2019) and other unique species. Especially in the communities of plants that live on walls, Amsterdam scores highest in the Netherlands for species richness (Sparrius, 2019). This is due to the warmer climate in the inner city and the stony environment resembling that of Mediterranean coasts, where many unique species hail from (Veenhuizen, et al., 2024). Also, birds that like rocky surroundings appreciate the high buildings of the city. Examples are the Peregrine falcon, who likes to build nests on high solitary roofs and has a multitude of pigeons to prey on, who in turn have been domesticated by humans and are originally from the mountains of Turkey (Hinchliffe & Whatmore, 2006). Humans are interested in this kind of cohabitation, as proven by the webcam in the nest of the falcon couple breeding on the roof of Rijksmuseum in Amsterdam (De Kam, 2024). Humans also provide birds with plenty of means to live in cities. Trash is a common source of food and even building material for nests (Hiemstra, et al., 2025).

Annex 2. Additional descriptions measuring framework

In this annex, additional literature is provided to further ground the framework developed in Chapter 3 in theory.

The structure is based on the passionate immersion indicators: attention, affect, and care, which are then intersected with the valuation of nature indicators: instrumental, relational, and intrinsic. For each measuring point, an explanation is provided, followed by a summary in the tables below.

Annex 2.1 Attention

Attention, as the act of noticing or paying attention, is subdivided into:

- Paying attention to the environment
- Paying attention to individual species in the shared environment

Both of these indicators will now be detailed further per valuation indicator.

2.1.1 Attention x Instrumental

Starting with the instrumental values that mainly come from anthropocentric thought, human-centered 'nature's contribution to people' (IPBES, 2022) or ecosystem services, is key here.

Attention to the environment and to individual species with an anthropocentric outlook focuses on a more material and experiential way to connect with wild urban nature. Van Heel et al. (2024) and Ives et al. (2018) explain the material connection to nature by consuming goods or materials from nature (e.g., eating an apple) and an experiential connection as direct interaction with the natural environment (e.g., being in a park) (Hunt et al., 2020). The anthropocentric nuance here is that nature is viewed solely as a resource (IPBES, 2022), and notions of entanglement, such as how an action affects other beings, are not taken into consideration. In the frame of passionate immersion, an anthropocentric angle to attention can be given by expressing comfort or discomfort with nature as a backdrop to their activity, characterized by not really connecting but plainly describing how it looks or functions for them (Hunt, et al., 2020; Lumber, et al., 2018; Van Heel, et al., 2024). The individual species, then, is solely seen as a caregiver to humans. Summarized in Table 12:

Table 12. Measuring point attention x instrumental

Measuring points: Attention x Instrumental			
Attention	Descriptions of the environment	**Nature for human benefit**	Descriptions of wild urban nature in the environment focus on its physical features and material aspects, viewed solely through a human-centred lens of utility and benefit.
	Descriptions of individual species	**Species role**	Understanding species' instrumental roles in the urban environment for the human: The more-than-human species only plays an instrumental role, for example, the apple is only described as a fruit for humans to eat, or the tree as giving shade and blocking sound.

2.1.2 Attention x Relational

Relational values assess the connections between humans, more-than-human beings, and the relationships between people and nature (IPBES, 2022). This approach balances anthropocentric perspectives with pluricentric views that see no single center but a 'web of life' (IPBES, 2022). It recognizes humans as part of their local ecosystems and emphasizes cultural ecosystem services, such as storytelling about species' origins or their symbolic and spiritual significance (Van den Berg, 2024). The text also describes how individual participants can observe other species through passionate immersion.

Attention from a relational valuation perspective emphasizes the descriptions of the environment and the other species present in it, primarily as entities that to possibly be in relation with. Hereby, attention is given to the environment as a means of place-attachment, which is the connection between the individual and their environment (Bulten et al., 2017). Recognizing one's environment is a gateway to being open to noticing others, giving attention to individual species, and forming a relationship with other more-than-human beings that are present (Chan et al., 2016; Tsing, 2015; Van Heel et al., 2023). Hence, visiting the environment can be seen as a prompt to meet other species (Bisshop, 2025). Attention to other individual species also evokes thinking about the cultural meaning of others, how the participant relates to the other being, and how that is embedded in cultural notions (of how to relate) or personal memory (Chan et al., 2016; Van Heel et al., 2024). Also, relationships between species are described, out of curiosity, but also to indicate the web of life that the human is part of. Summarized in Table 13:

Table 13. Measuring point attention x instrumental

Measuring points: Attention x Relational			
Attention	Descriptions of the environment	**Nature for connection**	A connection to the environment, place-attachment: participants describing a connection to their environment
	Descriptions of individual species	**Species meaning**	Relations with other beings, cultural meanings of others, noticing relations between species: how the human relates to individual more-than-human beings

2.1.3 Attention x Intrinsic

The intrinsic valuation of the experience through passionate immersion is built upon an ecocentric perspective, with more-than-human beings at the core and the human decentered (IPBES, 2022), thereby strongly addressing the inherent value of other species, which drives nature conservation today (Chan et al., 2016). However, in this thesis, a posthuman perspective is central as a mode of valuing urban nature intrinsically (Haraway, 2016; Puig de la Bellacasa, 2017; Van Dooren et al., 2016).

Attention to the environment and other species within it is interpreted as an intrinsic valuation, characterized by observing nature in a present and non-anticipatory manner, without expecting any benefits from other species, and instead looking at the environment and more-than-human

entities for who they are (O'Connor & Kenter, 2019). When others are interpreted, it is not from a human perspective, but from an ecocentric perspective: as a way of thinking-with the more-than-human (Haraway, 2016), relating to more-than-human beings not as objects to be studied but as co-thinkers mutually influencing each other. The movements or appearances of other species are central to the thinking (Solomon, 2024), such as their ecological charisma (Lorimer, 2015). Summarized in Table 14:

Table 14. Measuring point attention x intrinsic

Measuring points: Attention x Intrinsic			
Attention	Descriptions of the environment	**Nature for itself**	Observing the environment for its own sake: taking part in the environment is described an ecocentric perspective, not necessarily for human benefit.
	Descriptions of individual species	**Species for themselves**	Observing nature, other species for its own sake: certain other species are central to the perspective or the movement, thinking-with

Annex 2.2 Affect

Affect is the multisensory experience that is unconsciously translated in the body, in advance of thought, into feelings and emotions experienced in embodied encounters, consisting of the following indicators:

- Engaging with the senses
- Allowing emotions to emerge
- Recognizing the agency of others by being affected
- Being open to the response of more-than-humans

These indicators are further elaborated on below per valuation of wild urban nature.

2.2.1 Affect x Instrumental

Affect is measured through sensory engagement and emotional responses, often tied to human well-being in urban contexts (Ives et al., 2018), and thus takes into account recognition of agency and response from other beings, as that is key to being affected (Latour, 2004; Lorimer, 2015). These four indicators are discussed here through the lens of instrumental values.

This anthropocentric experience of affect view is rooted in traditions of urban planning such as the garden city model, which introduced green spaces functioning to promote public health, a rationale still influencing investments in urban nature today, including in Amsterdam (Municipality of Amsterdam, 2021; 2024), thus nature is installed to be restorative to human health (Doughty et al., 2023; Kaplan & Kaplan, 1989; Zhang et al., 2019). Therefore, in urban nature from an instrumental perspeictve, the direct embodied experience, the sensory engagement with urban nature, is often focused on the contributing to wellbeing of the individual (Doughty, et al., 2023; Zhang, et al., 2019), expressed in ways such as "I feel more relaxed here". Urban nature is often landscaped to be rather visually appealing than having high biodiversity values, with nice smelling non-native flowers for example or clean-looking turf grass lawns (Aronson et al., 2017; Kowarik, 2008; Rink & Emmrich, 2005), and having little noise pollution

(Zhang, et al., 2019). The emotions in such places are closely tied to this sensory experience, as the conscious expressions of the bodily reaction to urban nature. Urban nature can also have a negative impact on humans, such as the sensation of getting stung, creating negative emotions, and having negative health benefits (Soga & Gaston, 2022). Expression of beauty, emotional well-being, or the opposite, and nostalgic verbalizations, instrumentally value a place (Lumber, et al., 2017). However, what is disregarded here is what makes a person feel relaxed, which is the ability to relate to other present species (Gorman, 2019).

Agency does get recognized, but with an anthropocentric view, it is often for disservices or services to the human (Roelvink, 2018). This differs from the instrumental role of the specimen (attention) by expressing how it affects the human, e.g., "eating the apple makes me feel good", or the wasp is getting recognized over the painful sting it gave the human, without regard for why it stung. Response from other beings, then, can also be expressed in terms of human benefit, such as "the seagulls scream at me for not sharing my fries." Here, a human interpretation is given without attuning to the message of the other (Lorimer, 2015), framing the response as an anthropomorphic idea from the human, rather than the more-than-human being itself (Lorimer & Driessen, 2014). Summarized in Table 15:

Table 15. Measuring point affect x instrumental.

Measuring points: Affect x Instrumental			
Affect	Senses	**Sensory well-being**	Feelings contributed to well-being, such as attention restoration for mental health, or taking time for leisure in green space to calm one's body down, which affects the body directly, sometimes unconsciously.
	Emotions	**Emotional well-being**	Expression of beauty and emotional well-being or the opposite, tied to nostalgia, is a conscious verbalization of the emotions experienced
	Agency	**Agency for (dis)services**	Agency for (dis)services: more-than-human beings help or harm human by their actions in service or disservice.
	Response	**Response for (dis)services**	Response for (dis)services without attunement: response is interpreted in service to the human, from the human perspective, without listening to the other being.

2.2.2 Affect x Relational

Affect, viewed from a relational perspective, involves sensory engagement, expressed emotions, attributed agency, and responses from other beings from a more pluralistic angle.

Sensory engagement is expressed through a sense of deepened connection and a mindful presence, open to being present to others as well, allowing one to perceive them and be affected by their aesthetic and corporeal charisma (Lorimer, 2015). Emotions experienced include appreciation, which emerges through a connection to other beings, a strong sense of place, and an emotional connection to the place, in this case, characterized by a familiar species composition (Bulten et al., 2017; Ojeda et al., 2022). Additionally, emotions tied to spirituality include feeling one with others and recognizing that they live life on their own terms as well (Van

den Berg et al., 2024; O'Connor & Kenter, 2019). Agency is attributed to more-than-human species as co-inhabitants (IPBES, 2022), as well as co-dwellers with whom humans live in the city; however, charismatic species are more readily accepted by humans than others (Basak et al., 2023; Rupprecht, 2017a). Responses from other beings can occur when one engages with more-than-human species and is open to reciprocity (O'Connor & Kenter, 2019); for example, a participant looking a bird in the eye means the bird looks back at the participant. However, making sense of the response is tricky for humans, as a different language is spoken, which can be a barrier. Bisshop (2025) suggests this anticipation of the response is the communication in itself, and ultimately, you can always "vibe" with other beings as a universal language. Brown and Dilley, 2011 mention that companion animals that humans live with, such as dogs or cats, show how humans can communicate to other species by getting to know them better, and how they can learn a way to 'think through' the animal by noticing how the animal a reacts/immerses to its environment when walking the dog for example. Summarized in Table 16:

Table 16. Measuring point affect x relational

Measuring points: Affect x Relational			
Affect	Senses	**Sense of connection**	Sense of deepened connection, mindful presence: open and present to others
	Emotions	**Appreciation**	Appreciation, sense of place, spiritual experience: relations to other species can affect a human by feeling emotions around appreciation, feeling a strong sense of place, and having spiritual experiences, realizing that life is done together.
	Agency	**Respecting others**	Respecting others as co-inhabitants: Humans feeling part of the ecosystem as multispecies neighbours in their city
	Response	**Response on engagement**	Relational reciprocity: leaving space for a reaction on the engagement from a more-than-human being

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2.2.3 Affect x Instrinsic

Affect from an ecocentric perspective invites humans to attune their senses to the presences and agencies of other species, engaging relationally without assuming the world exists solely for human interpretation (Bisshop, 2025). Sensory engagement becomes a practice of thinking-with (Haraway, 2016), where questions like "what does the wind say?" foster attunement beyond human-centered meaning or language (Bisshop, 2025). Emotions of empathy (Basak et al., 2022) arise as humans relate to other beings' experiences, forming a basis for cohabitation and respectful interaction (Ojeda et al., 2022) grounded in response-ability (Haraway, 2016). Recognizing the agency of other species affirms their self-determination and autonomy of action (Ghijselinck, 2023; Gorman, 2019), while human responses acknowledge that both humans and more-than-humans co-shape the world together (Haraway, 2016). Thinking-with here means engaging collaboratively with other beings rather than imposing human-centered thought (Puig de la Bellacasa, 2017), and respecting that responses from others—whether understood or not—must honor their autonomy to react freely (Bisshop, 2025). Response-ability, then, becomes the ethical, situated, and reciprocal capacity to respond attentively within these entangled

relationships.thinking through the human brain in regard to other species, but thinking together with others (Puig de la Bellacasa, 2017). Response from other beings can be understood or not, as long as their autonomy to react is key (Bisshop, 2025). Summarized in Table 17:

Table 17. Measuring point affect x intrinsic

Measuring points: Affect x Intrinsic			
Affect	Senses	**Non-interpretive senses**	General listening, watching, feeling without need for human interpretation, being present amongst other species is enough
	Emotions	**Empathy**	Feeling affected by the state of being of another, means being open to meaningfully respond
	Agency	**Autonomy in agency**	Recognizing inherent worth and autonomy in agency: self-determination is key, more-than-human beings are autonomous in action
	Response	**Autonomy in response**	Recognizing the other's inherent worth and freedom to respond or not, both beings realize they co-shape the world through interaction and think together, not for each other.

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Annex 2.3 Care

Care defined as the ethical responsibility to respond to the needs of more-than-human beings, and its actionable nature reflects a changed perspective and behavior toward the multispecies world, and thus indicates:

- Ethics
- Changed perspective
- Changed behavior

These indicators are further elaborated on below, in relation to the valuation of wild urban nature.

2.3.1 Care x Instrumental

Care, as the ethical responsibility and the transformative potential of passionate immersion, can be assessed through instrumental values. First, caring as an ethical responsibility enhances one's prosperity: it improves an individual's livelihood by utilizing the natural resources provided by other species (O'Connor & Kenter, 2019; Kendal & Raymond, 2019). For example, urban green spaces are managed for urban agriculture to produce food products, or for their aesthetic value to provide beauty. Additionally, a one-sided caring leisure activity, such as feeding the ducks, can bring joy to humans, but in this case, the human disregards the well-being of the duck, as it becomes sick from eating bread (Tully & Carr, 2023). Taking a material lens, the realization that humans have an impact on their environment through the consumption of goods is also a form of care (Ives et al., 2018). Realizing impact, then, is an avenue for rethinking certain patterns, changing one's perspective on what nature should bring to people. The expressed narrative about what nature is and what it should give (O'Connor & Kenter, 2019), can change through passionate immersion. For example, meeting new species can make participants more aware of the number

of non-human species supporting their well-being and the ways they do so. Additionally, one's behavior may change, for example, to more pro-environmental behaviors, such as gardening or refraining from walking on flowers to preserve the instrumental function of the more-than-human world (Ives et al., 2018), while still benefiting human well-being. Summarized in Table 18:

Table 18. Measuring point care x instrumental

Measuring point: Care x Instrumental			
Care	Ethics	**Prosperity**	Providing prosperity, impacting the livelihood of the individual: taking the ethical responsibility in responding to other species as a way to improve the well-being of humans, without regard for the other impacted species
	(Changed) perspective	**What nature should bring to people**	Narrative on what nature should bring to people, and a change herein, which are culturally embedded human ideas about nature, possible to change due to passionate immersion
	(Changed) behavior	**Pro-environmental behavior**	Pro-environmental or well-being geared behavior changes: meaning the behavior of or actions undertaken by humans towards urban nature, which can change due to passionate immersion

2.3.2 Care x Relational

Care in a relational sense involves ethical responsibility, a changed perspective on what wild urban nature is, and changed behavior toward other species. Ethical responsibility is expressed when individuals develop ethical concerns for the well-being of other species, demonstrating compassion (Lumber et al., 2017) and bridging the gap between self and more-than-human others by taking responsibility and becoming stewards of urban nature. Although rooted in traditions of human exceptionalism, stewards and managers of urban green spaces nonetheless enact care through their efforts to connect with the landscape (Chan et al., 2016; Danford et al., 2017). Increasingly, citizens are also taking responsibility for public green spaces in their neighborhoods, fostering relationships with both human and more-than-human neighbors (Mattijssen et al., 2017).

This shift in perspective can include recognizing the time paths of other species, for example, aligning one's sense of time with the growth of a plant or the movements of a hedgehog (Solomon, 2023). Perspective is key to passionate immersion, as it shapes how individuals experience and identify with wild urban nature. Early strong connections to nature, like spending time in nature during childhood, can lead adults to interact with nature more frequently and meaningfully later in life (Van den Berg et al., 2021; Richardson & Chapple, 2021). Recognizing the scale of life can also open up spiritual dimensions of these relationships.

Such changed perspectives often translate into changed behavior: after positive encounters with wild urban nature, individuals may actively seek further interaction, deepening their relationship with more-than-human life (Basak et al., 2022; Soga & Gaston, 2016) and becoming more aware of these interactions (Ives et al., 2018; Schouten, 2011).

Changed behavior may also involve sharing experiences with others, fostering conversations about nature, or directly tending to urban green spaces through place-keeping, an increasingly common practice in the Netherlands (Mattijssen et al., 2017; Buijs et al, 2019; PBL, 2018). Summarized in Table 19:

Table 19. Measuring point care x relational

Measuring point: Care x Relational			
Care	Ethics	**Stewardship**	Ethical concern, compassion, responsibility, stewardship: include care for other species from a human perspective, act upon worries or well-being for more-than-humans by providing them with 'what's good for them'
	(Changed) perspective	**Connection to nature**	Identity transformation, wanting a stronger connection to nature: how a person's relation to nature is embedded in one's identity
	(Changed) behavior	**Seeking relation**	Behavioral shift in seeking relation, talking with others about nature, place-keeping: acting upon a (stronger) relation to nature through passionate immersion, by seeking more nature interactions or tending an urban garden.

2.3.3 Care x Intrinsic

Care grounded in intrinsic values becomes an ethical responsibility expressed as kinship with nature, where humans and more-than-humans care for each other as part of an obligation to support mutual flourishing (Haraway, 2016; Paulson, 2019). This ethical kinship involves making kin, building lasting, non-disposable relationships with other beings, akin to adopting them as family, drawing inspiration from Indigenous modes of relating to others and the land (Haraway, 2016). Such care also reflects a changed perspective, where humans see themselves as one species among many, recognizing the intrinsic value of all life (O'Connor & Kenter, 2018). This decentered view invites thinking about what humans can learn from other species, such as understanding the lives of soil organisms and identifying with them, fostering humility and respect (Puig de la Bellacasa, 2017; Roelvink, 2018). Finally, meeting wild urban species through passionate immersion can inspire changed behavior that respects nature for what it is, motivating people to minimize their impact and take accountability for their actions (Puig de la Bellacasa, 2017), which positively reinforces more attentiveness to others to minimize harm (Verploegen, 2025). Summarized in Table 20.

Table 20. Measuring point care x intrinsic

Measuring point: Care x Intrinsic			
Care	Ethics	**Kinship**	Ethical obligation, kinship with nature: caring for each other to cocreate worlds of mutural flourishing
	(Changed) perspective	**Similar value**	The human as a being among many, with similar value to others: a decentered worldview.
	(Changed) behavior	**Minimizing impact**	Behavioral shifts respecting nature, minimizing impact: trough natures and one selfs inherent value, mutual respect shifts behavior towards more accountability.

Annex 3: Questionnaire before daily activities

Table 21. Questions asked in the interview before passionate immersion activities were carried out, with the general topic, question number, passionate immersion indicator (PI), questions in English and Dutch, and their source.

Topic		PI	Question (English)	Question (Dutch)	Source
Background	1		What is your name?	Hoe heet je?	
	2		What gender do you identify with most?	Met welk gender identificeer je je?	
	3		What is your age at the moment of the interview?	Hoe oud ben je op het moment van het interview?	
	4		What is your occupation?	Wat doe je in het dagelijks leven?	
	5		What is your highest level of education?	Wat is je hoogste opleidingsniveau?	
	6		Which neighborhood do you live in?	In welke buurt woon je?	
Intentions	7		What is your motivation to participate in this research?	Wat motiveert jou om mee te doe aan dit onderzoek	Van Heel, et al., 2024
	8		What do you expect to get out of this research?	Wat verwacht je van dit onderzoek (en daarna)?	
	9		What intentions do you set for the activities? (Write them down and keep them with you)	Welke intenties zet jij omtrent de activiteiten? (schrijf ze op en houd ze bij je)	
Environmental (spatial) awareness	10	Attention	How would you describe the place you live? What does it look like now?	Hoe zou je de omgeving waar je woont omschrijven? Hoe ziet het eruit?	
Identification with a place	11	Attention, care	How would you like your neighborhood or surroundings to look or feel in the future?	Hoe zou je willen dat je buurt of omgeving eruit ziet of voelt in de toekomst?	
	13	Care	What impact do/could you have in this vision?	Welke impact zou jij hebben binnen deze visie?	
	14	Affect, care	What role do others (human and more-than-human species) play in this vision?	Welke rol spelen andere (niet-menselijke) soorten in deze visie?	
	15	Affect, care	In what ways do you feel (or not feel) connected to your surroundings?	Om welke manier voel jij je verbonden (of niet) tot je omgeving?	
Relation to nature	16		What does "urban nature" mean to you?	Wat betekend stadsnatuur voor jou?	*Definition, belief* Buijs, 2009a

	17	Affect, care	How is this vision shaped through experiences when you were young?	Hoe is deze kijk ontstaan, bijvoorbeeld door ervaringen toen je jonger was?	
	18		If you were to place yourself on a scale of connection with nature (see Figure A), where would you place yourself, and why?	Als je jezelf op een schaal van connectie met de natuur zou plaatsen (zie Figuur A), waar zou dat dan zijn, en waarom?	*Nature in self-scale* Van Heel, et al., 2024 *Belief: N↔C* Buijs, 2009a
	19	Attention	What do you think **wild** urban nature is? How does this differ from the previous answer?	Wat denk je dat **wilde** stadsnatuur is? Hoe denk je dat dit verschilt van je vorige antwoord?	Buijs, 2009a
	20	Attention	How do you see wild nature in your environment?	Hoe zie je wilde stadsnatuur voor je in je omgeving?	
	21	Attention	Do you experience urban nature? How and where (in your neighbourhood)?	Ervaar jij wel eens stadsnatuur? Hoe en waar (in welke buurt)?	Van den Berg, 2021; Bulten, et al., 2017
	22	Attention, affect	With who/what living beings do you experience this (human and more-than-human alike?)	Met wie/welke andere levenden ervaar jij dit?	
	23	Affect, care	What activities do you do to experience nature? Where and how often?	Welke activiteiten doe jij om stadsnatuur (en natuur buiten de stad) te ervaren? Waar? En hoe vaak?	Richardson, 2019
Values on nature	24	Care	Do you find urban nature important and why?	Vind je stadsnatuur belangrijk? Waarom?	Buijs, 2009a
	25	Care	What do you value most about urban nature? Why?	Wat waardeer je het meeste aan stadsnatuur? Waarom?	
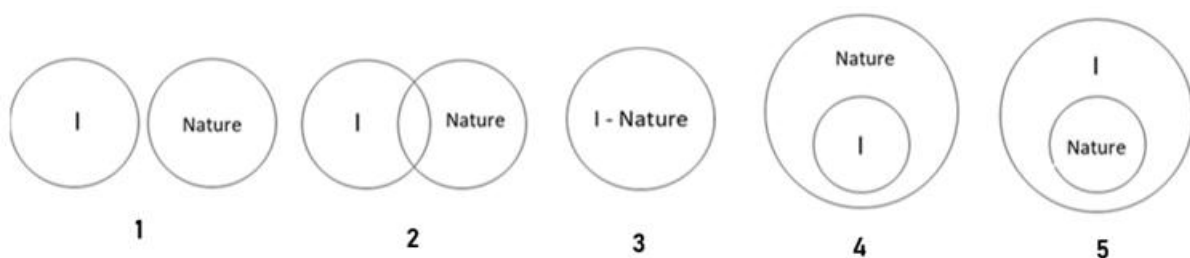
Figure A: the nature-in-self scale

Annex 4: Questionnaire after daily activities

Table 22. Questions asked in the interview after passionate immersion activities were carried out, with the general topic, question number, passionate immersion indicator (PI), questions in English and Dutch, and their source

Topic	Q	PI	Question (English)	Question (Dutch)	Source
Reflection on the activities	1	Attention, affect	What did the activities bring you in general?	Wat hebben de activiteiten je gebracht/opgeleverd?	Van Heel, et al., 2024
	2		Which one did you like the most?	Welke vond je het leukst?	
	3	Attention, affect	What are your main observations?	Wat zijn je voornaamste observaties?	
	4	Care	Have you noticed any behavioral change in yourself?	Heb je een gedragsverandering in jezelf gemerkt?	
Environmental awareness	5	Care	How do you feel about your role in your direct environment?	Hoe ervaar je jouw rol in je directe (ruimtelijke) omgeving?	
	6	Affect, care	How do you feel about other species' role in your environment?	Hoe ervaar je de rol van andere soorten in je omgeving?	
	7	Attention, affect	Do you feel connected to your environment?	Voel je je verbonden met je omgeving?	
	8	Attention, affect, care	How has this connection changed by doing the activities?	Hoe is deze verbondenheid veranderd door het doen van de activiteiten?	
	9	Attention	Where in your neighborhood can you find wild nature?	Waar in jouw buurt kun je wilde stadsnatuur vinden?	
	10	Attention, care	Is there anything you would change about your environment/public space in the place you live after this experience?	Is er iets dat je zou willen veranderen aan (de publieke ruimte) in jou omgeving na deze activiteiten?	
	11	Attention, care	What is your vision for your neighbourhood?	Wat is jouw visie voor je buurt?	
	12	Attention, care	What role do you play in this? What role do others (humans and more-than-human species) play in this?	Welke rol speel jij in deze visie? Welke rollen spelen andere soorten hierin?	
	13	Affect, care	Do you feel connected to your environment?	Voel je je verbonden met je omgeving?	
Relation to nature	14	Attention, care	What do you think is urban nature now?	Wat denk je dat stadnatuur is nu?	

| | 15 | Attention, care | What do you think is wild urban nature now? | Wat denk je dat wilde stadsnatuur is nu? | |
	16		Can you express your relation to nature again on the scale and explain how the experience has shaped this? *(Figure A)*	Kun je opnieuw je relatie met de natuur op de schaal uitdrukken en uitleggen hoe de ervaring deze positie heeft beïnvloed? *(Figuur A)*	
	17	Care	How has paying more attention shifted your view?	Is je blik op stadsnatuur veranderd nadat je meer aandacht had voor je omgeving?	
	18	Affect, care	Do you feel connected to urban nature?	Voel je je verbonden met stadsnatuur?	
Values of nature	19	Care	Do you find urban nature important? Why?	Vind je stadsnatuur belangrijk? Waarom?	
	20	Care	What do you value the most about urban nature?	Wat waardeer je het meest aan stadsnatuur?	
	21	Care	Has your evaluation of urban nature changed through doing the activities?	Is je waardering voor stadsnatuur veranderd door het doen van de activiteiten?	
Reflection on the methods	22		Did you do the breathing exercises (including visualizing oxygen exchange) and how did that contribute to the experience?	Heb je de ademhalingsoefeningen gedaan (inclusief de zuurstof uitwisseling) en in hoeverre droeg dit bij aan de ervaring?	
	23		How did answering the journaling prompts contribute to the experience?	In hoeverre droegen de dagboekvragen bij aan de ervaring?	
	24		Do you have any tips for future research with this method?	Heb je nog tips voor toekomstig onderzoek met deze methode?	
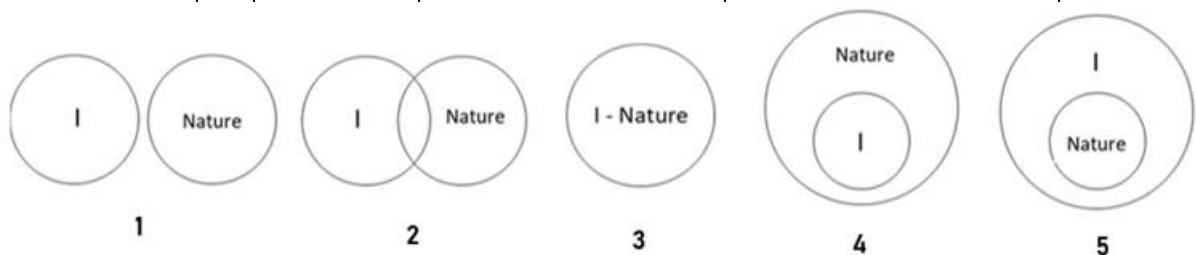
Figure A: the nature-in-self scale

Annex 5: Consent form

Consent Form for Participation in an Interview

Multispecies urbanities: immersion and exploration of values on wilder urban nature in Amsterdam. Purpose of the Interview: Immersing yourself in your wild environment as a citizen scientist and discovering the underlying values you hold in your relationship to wild urban nature.

Consent to Participation:
I agree to participate in the interview for this thesis research. I understand that my participation is voluntary and that I can withdraw at any time without any consequences, meaning that the data I provided will be erased.

Consent to Record:

☐ I give my consent for the interview to be recorded as an audio file. I understand that the transcription will be used solely for the purpose of this academic project and will be treated with confidentiality.

☐ I give my consent for the interview to be recorded as an audio file to be used in the documentary on the academic project.

Use of Information:
The information provided during the interview will be used for educational and research purposes, including presentations and reports related to this thesis. Your name will be anonymized, but direct quotes will be used in the thesis report, presentations, and related academic materials. I understand that I can request to review and approve any quotes attributed to me before they are included in the final report, which has a final deadline of 11 July 2025.

Confidentiality:
All personal information and identifiable data will be kept confidential. The interview data will be securely stored and only accessible to the author and supervisors of the thesis research. Any published material will anonymize personal identifiers unless explicit permission is granted otherwise.

Right to Withdraw:
I understand that I have the right to withdraw from the interview at any point and to request the deletion of any provided information without providing a reason.

By signing this form, I acknowledge that I have read and understood the information provided above, and I voluntarily agree to participate in the interview under the stated terms and conditions.

Date: _____

Name, signature: _____

Contact Information:
For any questions or further information about the project or my participation, I can contact Deborah van der Vlist, at deborah.vandervlist@wur.nl or +31 6 50400993.

Annex 6: Additional descriptions of the results validating the measuring framework

To dig deeper into the results of the testing of the measuring framework, additional descriptions are given. First, the background of the participants is explained, then, their definition of wild urban nature and where to find its, after which the results are given for each passionate immersion indicator (attention, affect, and, care), arranged based on the results before, during, and after the Multispecies Safari.

Annex 6.1 Background of the participants

The backgrounds of the participants differed in terms of demographics, their relationship with nature, and the reason for their participation. This introductory subchapter is a getting-to-know-you the participants.

The participants in this study shared several commonalities, as shown in Table 23.

Table 23. Demographic background of the participants (gender, age and neighbouhood of residency), their image of nature, and their chosen position on the nature-in-self-scale.

P	G	Age	Neighbourhood of residency	Occupation	Education level	Image of Nature	Nature-in-self-scale
1	M	25	Centrum, Jordaan	Chilling	Theoretical	Inclusive	4
2	M	26	West, Baarsjes	Studying	Theoretical	Wilderness	combi 3/4 --> 2
3	F	27	Oost, Borneo eiland	Working	Theoretical	Aesthetic	2 --> 4
4	M	36	Oost, Borneo eiland	Working	Theoretical	Wilderness	2 --> 4
5	M	36	Oost, Wittenburg	Working	Theoretical	Wilderness	3
6	F	21	Oost, Science Park	Studying	Theoretical	Inclusive	3 --> 4
7	M	46	West, Staatliedenbuurt	Working	Theoretical	Aesthetic	4
8	F	27	Zuid, Marthonbuurt	Working	Theoretical	Inclusive	4
9	F	38	West, Bos en Lommer	Working	Theoretical	Functional	4 --> 5
10	M	26	Centrum, Westelijke eilanden	Working	Theoretical	Wilderness	3
11	F	52	Centrum, Universiteitskwartier	Working	Theoretical	Inclusive	5 --> combi 2/4
12	F	37	Noord, Molenwijk	Working	Theoretical	Inclusive	3 --> 4
13	F	25	West, Kinkerbuurt	Recovering	Theoretical	Inclusive	3 --> 4
14	M	26	Zuidoost, Gein	Working	Secondary	Wildernesss	2 --> combi 2/3
15	F	36	Noord, Zaandam	Working	Theoretical	Wilderness	n.d.

A total of 15 participants joined the study. As explained in the methods, the participants were all based in Amsterdam. Also, almost all followed theoretically oriented education and were all in the second quarter of life, between 25 and 52 years old. The participants also varied in their occupations, although most were working full-time.
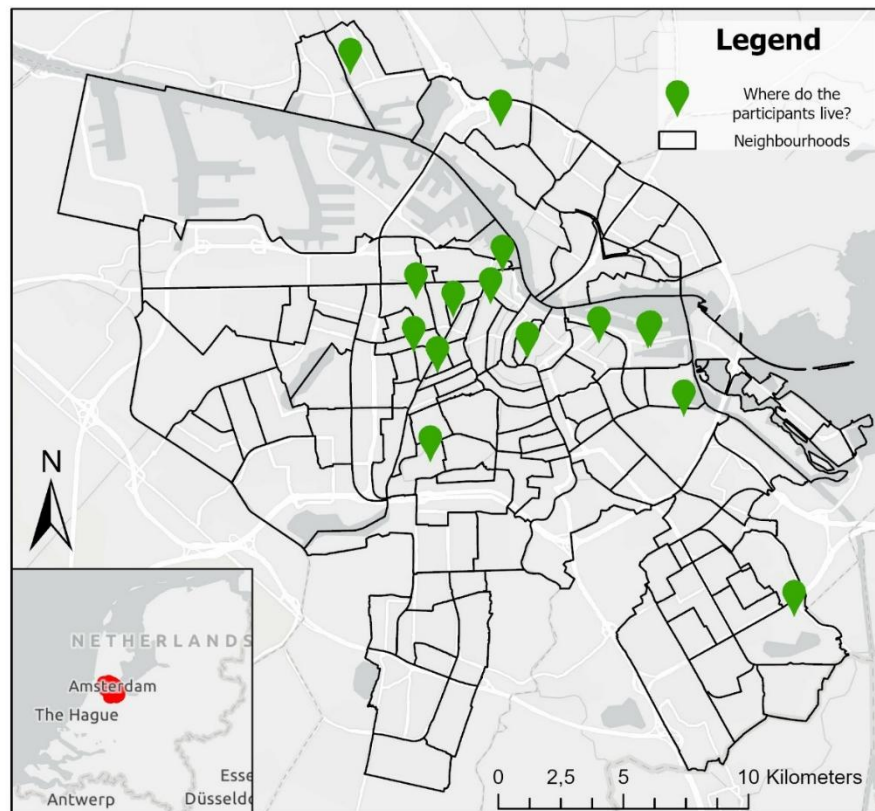
Figure 16. Participants' neighbourhoods of residence in Amsterdam.

The participants in this study resided in various areas of Amsterdam, as shown in Figure 16. In this way, most participants had a different reference neighbourhood in which to find wild urban nature.

The motivation of the participants to join the research where because of interest for the topic of wild urban nature (P1, 5, 6, 8 & 14), wanting to contribute to research on the topic (P4, 5, 7, 10, 11, 14 & 15), wanting to undergo the experience of the Multispecies Safri (P1, 2, 7, 8, 9, 12 & 15), or personal favour for the researcher (P3, 4, 6, 10 & 13). As expectations, participants hoped to be going outside a lot (P1, 2 & 12), to reflect on their relationship with nature (P1, 6, 7, 8, 9, 10, 12 & 15), to develop awareness (P3, 5, 9 & 15) and get clear instructions (P5). The intentions the participants set were to discover the other species living in their environment (P1, 2, 6, & 8) and to adopt an open (P1, 2, 3, 4, 8, & 9) and honest (P10) attitude.

More information on the background of the participants included their preconceptions and relationship to nature. In terms of the preconceptions of what nature is, measured in the image of nature, and the relation to nature, measured by the nature-in-self scale, as explained in Chapter 4.1.3, the following things can be said about the participant's background.

First, for the **image of nature,** as seen in Chapter 4.1.3.1 and Figure 17, most participants had a wilderness (P2, 4, 5, 10, 14 & 15) or inclusive image of nature (P1, 6, 8, 11, 12 & 13). Participants with a wilderness image of nature tended to think that nature is outside of human influence and should be protected for its own good, meaning they hold more ecocentric values, support hands-off management of nature, and think that nature is fragile and is healthy when an ecological balance is established. Participants with an inclusive image of nature had a broad definition of what nature was and where it existed. They thought of nature as dynamic, and thus that it could handle
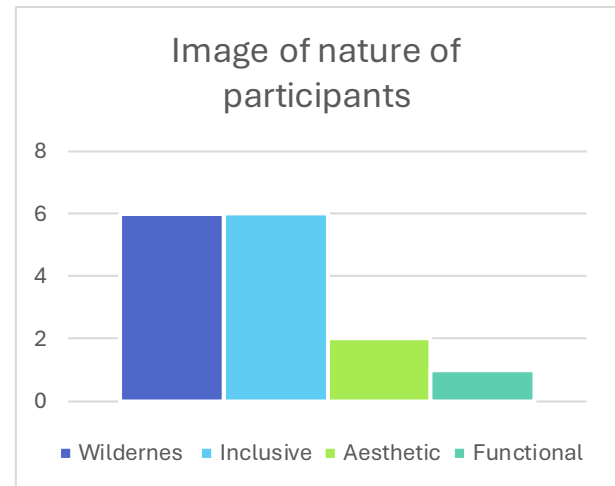
Figure 17. Images of nature of the participants.

some limited management, leaning into more biocentric values where nature's processes are central. With most participants holding an ecocentric value perspective, only three participants had an anthropocentric one. Two participants held an aesthetic view (P3 & 7), and one had a functional image (P9) of nature, meaning that nature is very broadly defined, is part of the human world, and should be managed, either by limiting it for an aesthetically pleasing landscape or by engaging in hands-on activities for agricultural purposes. Finally, it was observed that after the Multispecies Safari, people had seen much more nature around them in the city, and thus that their definition of nature had slightly widened and nature was seen as more resilient than before.

Second, the participants also indicated their relationships to nature through the visual device of the **nature-in-self scale** that was presented in both interviews (see Chapter 4.1.3, Figure 18), with the outcomes visually presented in Figure 19.
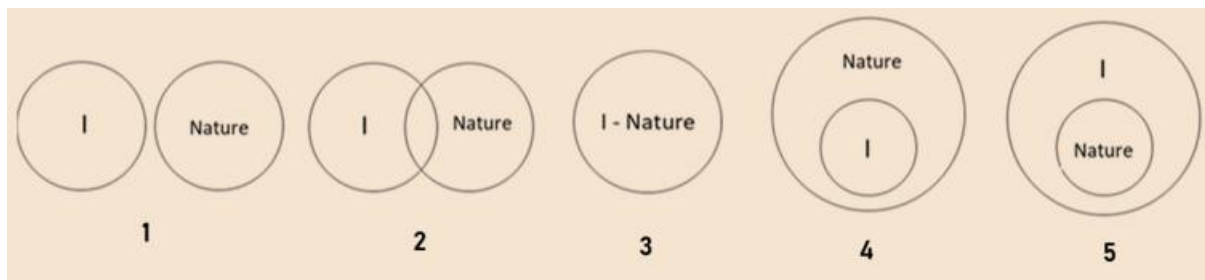
Figure 18. The Nature-in-self-scale, theorized by Schultz (2002), updated by Van Heel et al. (2023; 2024), visualizes how people see their connection to nature.

Before the Multispecies Safari, participants placed themselves on the nature-in-self scale mostly at position 3 'indistinguishable from nature' (P5, 6, 10, 12 & 13), or position 4, 'humans as part of nature', with some participants explaining that nature is bigger than humanity (P1, 8, 9).
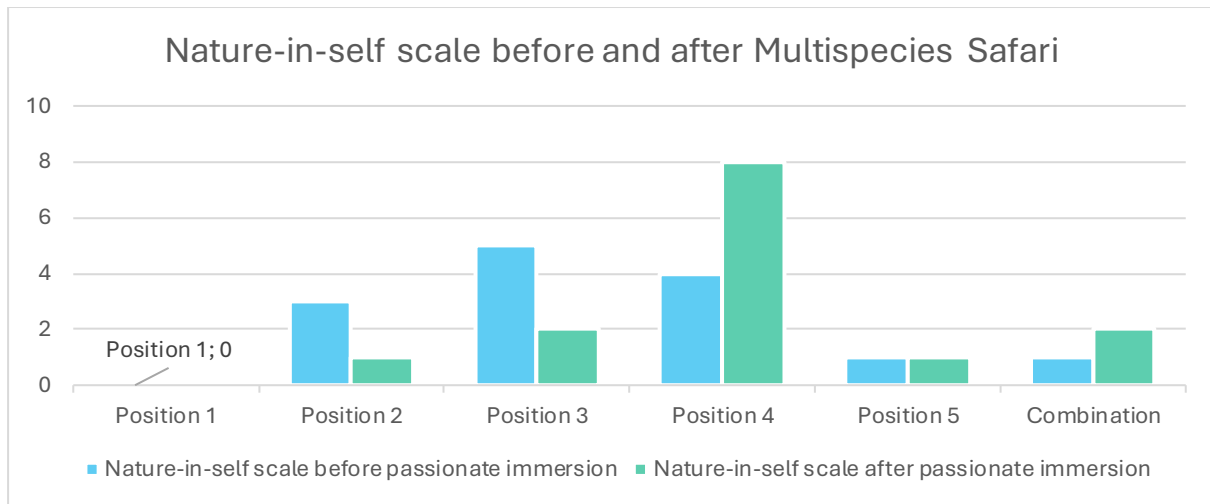
Figure 19. Nature-in-self-scale before and after the Multispecies Safari.

For most participants, this position changed after they participated in the research and immersed themselves in the wild urban nature of Amsterdam (P2, 3, 4, 6, 9, 11, 12, 13, & 15). Reasons mentioned for this were that participants found a bigger difference between the man-made environment and urban nature that reflected on themselves (P2, 14) or found that the gained awareness of urban nature had (re-)established their connection to nature (P6 & 12). The latter experience also made participants realise they were actually not part of nature but a separate entity, shown by a move from position 3 to 4 (P6, 12 & 13) or further separated on position 2 'including: one as part of the other' (P2). Most participants chose position 4 (or a combination thereof) after the Multispecies Safari, indicating a closer connection to nature (P1, 3, 4, 6, 7, 8, 11, 12, & 13). No clear linkages were found between the image of nature and the position on the nature-in-self scale.

When asked the question "Do you find wild urban nature important?", all participants said 'yes' for different reasons:

- **Instrumental reasons**: good for (mental) health (P1, 7, 9, 12 & 15), e.g, calming down (P6, 13 & 14), climate adaptation (P12 & 15), e.g., cooling down the city (P1, 8 & 9), access to nature (P4), improving air quality (P1, 9), or just nice to see (P7 & 9)
- **Relational reasons**: reminder that the human species lives with other species too (P1, 2, 10, 13 & 14), cultural elements like stories and metaphors (P5), reminder of the scale and time of other lives (P5 & P6), and brings people together (P9)
- **Intrinsic reasons**: good for biodiversity (P1, 7, 8 & 14) and a reminder that urban species are also nature (P2).

Thus, all participants have a relation to nature, some more intimate than others. According to their image of nature, one-third thinks of nature as a wild thing outside the city, while others think it encompasses everything.

Summarizing, of the 15 participants, all are under 52 years old, almost all are theoretically educated, there is a 50/50 split in gender, and most live in a relatively dispersed but central area of Amsterdam. Most participants had a wilderness or inclusive image of nature, and before the the Multispecies Safariactivities, some participants saw themselves as 'indistinguishable from nature', which changed after the activities to a larger focus on separate entities, as most

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participants changed their position to 'humans as part of nature'. To better understand what participants think is wild urban nature, this is explained in the following section.

Annex 6.2 Definition wild urban nature

The participants defined wild urban in comparison to urban nature differently before, during, and after the Multispecies Safari, as shown in Table 24.

Before the Multispecies Safari, half of the participants named urban nature 'all life in the city', including humans and planted species. However, the role of humans is contested, with one participant first excluding and later including humans in the local ecosystem (P2). Wild urban nature was defined by most participants as 'not managed or helped by humans', often correlating with 'does what it wants, spontaneous'. For example, participant 7 defined it as "*that there are no humans that maintain it or decide what exists or grows there, so wild for me is something that can go its own way, without humans intervening*". And participant 4 answered to the difference between wild and human-controlled as "*spontaneity, you know, just when you don't have symmetry*". It is also not bound to a location, according to half of the participants, of which P2 commented, "*It is not bound to a place, it starts to exist out of itself, instead of being placed by a human*".

Table 24. Definition of urban nature and wild urban nature, before and after the Multispecies Safari.

	Definition wild urban nature	Said by who ?	Definition urban nature	Said by who?
Before	Not managed or helped by humans	P1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12 & 15	All life in the city	P1, 5, 6, 7, 10, 12 & 13
	Does what it wants, spontaneous	P1, 3, 4, 5, 6, 7, 10, 11, 12, 14 & 15	Abiotic factors (rocks , the sky)	Yes: P6, 10 & 13 Not stones: P2
	Location is self-determined (e.g., birds)	P1, 2, 4, 6, 8 & 10	All non-human agents	P2 & 8
	Humans are not wild (domesticated)	Yes: P6 Not sure: P13	Humans are part of nature	P1, 2, 4, 5, 10, 12 & 13
	No path, no symmetry	P4 & 14	Pets are nature	Yes: P4 No:P2
	Well-balanced ecosystem (no invasive alien species)	P2, 8	Well-balanced ecosystem (no invasive alien species)	P2
			Planted species (e.g., trees, flowers)	P4, 6, 8, 10, 11 & 15
After	Not managed or helped by humans	P1, 3, 6, 7, 12 & 15		
	Does what it wants, spontaneous	P1, 3, 4, 5, 6, 7, 9, 10 & 15		
	Location is self-determined (e.g., birds)	P1		
	Domestic animals	P4 & 13		
	Humans	P4 & 13		

After the Multispecies Safari, in general, participants found more nature (P1, 3, 4, 5, 7, 8 & 9) and were more aware of it (P1, 3, 4, 7, 8, 11, 12, 14 & 15), or not so much (P10). In the interviews that followed, urban nature was no longer defined, but rather the definition of wild urban nature was discussed, as it was the object of the activities. Then, half of the participants still held to the original definition of 'not managed or helped by humans' and 'it does what it wants, spontaneous'. However, some participants questioned what was wild and what was not; therefore, they were also less sure where to find it (P 1, 3, 4, 8 & 11). For example, trees of flowers planted can rewild too (P8, 10, 11 & 15), as P8 said, "*what I think wild urban nature is... Because I thought that last time I said about that: everything that is left alone, but then I thought, yes, why ... if something was put in a pot by a person, would it not be wild according to that definition? But why would that ... that can also be wild afterwards if that is not maintained by humans?*". Pet animals could also rewild, like the rose-ringed parakeet (P3, 5 & 13), and, whereas first pet animals were first not considered wild urban nature (P4, 6, 8, 10, 11 & 15), later it was realized domesticated animals can also exhibit wild behaviour, and can therefore be wild, including humans (P4 & 13).

To summarise, wild urban nature is defined mainly as species that go their own way in the city, without human intervention. Some species turned out wilder than expected beforehand, after paying more attention to them during the Multispecies Safari activities.

Annex 6.3 Location wild urban nature

The location of wild urban nature in comparison to urban nature also differed before and after the Multispecies Safari, as shown in Table 25.

Before the Multispecies Safari, half of the participants believed that urban nature was typically found in parks, near water, or in the water itself, while others found nature in the streets or in people's gardens. Wild urban nature was also found close to or inside the water, according to some participants, and in the parks, but then places where fewer people go. Half of the participants said that wild urban nature grows between tiles or stones, and some participants also mentioned that wild urban nature grows outside the city, or in people's backyards.

During the Multispecies Safari activities, participants sent pictures of wild urban nature, which showed where participants actually found it, as seen in Chapter 4.4: Figures 22, 23, and 24. Here, locations such as 'between tiles', 'next to the water', and in more 'left-alone areas of urban parks'. The Multispecies Safari activities were mainly carried out by the participants in urban parks in Amsterdam, e.g., the Vondelpark (P2 & 13), Diemerpark (P6 & 14), Westerpark (P1, 7, 8, 9 & 10), Rembrandtpark (P2 & 13), Erasmuspark (P2), Amstelpark (P2), Vliegenbos (P3 & 14), Flevopark (P6), Sloterplas (P13), Gaasperplas (13 & 14), and the Amsterdamse Bos (P13). Others went to smaller green gardens around their house (P1, 5, 6, 7, 8, 9, 10, 12, 13 & 15), found wild urban nature in the streets (P3, 4, 5, 6, 7, 8, 9, 10 & 11), and experienced wild urban nature next to waterbodies (P1, 2, 6, 8, 10 & 15). Two participants mentioned that a few street trees were already enough to have a nature experience (P6 & 8). In contrast, another was only able to experience nature by immersing themselves in lots of greenery (P2, 12 & 14).

Figure 20. Some wild urban nature as spontaneous vegetation between tiles. Source: participants 8 & 9

Figure 21. Some wild urban nature at the waterside. Source: participants 1 & 10.

Figure 22. Wild urban nature in urban forests (left) and left-alone areas or urban park (middle, right). Source: participants 1, 2 & 15.

After the Multispecies Safari, urban nature was discussed less again and therefore left out. Wild urban nature was found by half of the participants 'in the streets' and 'in people's gardens', some found it 'between tiles' (Table 25, Figure 22,23 & 24), and 'next to or in the water'. For example, participant 10 said he found wild nature "*in my neighbourhood in many little spots here and there, for example a tree circle where all kinds of things started growing int, or somebody's façade garden that now has more plants that that person did not plant themselves, for example at the water I send you a few pictures and there you have a lot of plants that started living in between the stones*". Some participants realized that wild nature can be everywhere because humans cannot oppress it (P1, 3, 4, 6 & 8), for example P6 "*well all the places that are badly maintained, there is just much more to experience, I find that interesting*". Some participants found new species around their house that they had not seen before (P5, 6, 7, 9 & 14). Participant 4 had practiced understand what was wild and what was not "*it became like a hobby, you know, like one more thing, you know, to notice [...] taking attention to it, it was cool and also help me realize the difference when is like planned nature and then when when it's more spontaneous, even made by man*".

Table 25. Where to find urban nature and wild urban nature, before and after the Multispecies Safari.

	Location wild urban nature	Who	Location urban nature	Who
Before	In the park, where less people go	P2, 7, 9, 11	Park	P2, 3, 4, 6, 7, 12
	Vacant lots	P7	Courtyard, garden	P1, 2, 9, 11
	The streets (e.g., trees, grass, flowers, planters)	P15	The streets (e.g., trees, grass, flowers, planters)	P2, 3, 4, 13
	In between the tiles/stones	P3, 5, 6, 8, 9, 10, 13	Outside of the city	P6, 7, 8, 15
	Next to or in the water	P2, 6, 8, 9, 10	Next to or in the water	P2, 4,6, 8, 9, 13, 15
	Outside of the city	P4, 10, 15	Petting zoo	P12
	Backyard	P2, 4, 11		
	Urban forest	P14		
After	Park	P6, 8		
	The streets (e.g., trees, grass, flowers, planters)	P3, 4, 6, 8, 10, 11, 12		
	In between the tiles/stones	P8, 9, 10, 14		
	Next to or in the water	P3, 6, 8, 10		
	Outside of the city	P4		
	Courtyard, garden	P5, 8, 9, 10, 11 & 15		
	Urban forest	P6, 14		

To summarize, most urban green spaces are typically found in parks or near bodies of water. Additionally, wild urban nature can also be found between tiles or stones. After the Multispecies Safari, participants also discovered gardens and courtyards as locations.

Now, **more detailed results are provided**, aimed at offering an overview of the test for each individual measuring point. In this way, both the frequency and the content of the measuring point give an indicator of the relevance of the measuring point.

These results are **structured** around the data collection that occurred before (Chapter Annex 6.4), during (Chapter Annex 6.5), and after the Multispecies Safari (Chapter Annex 6.6). The tables give the main takeaways per different passionate immersion indicators: attention, affect, and care. The colour in the table indicates the value type: blue is instrumental, orange is relational, and green is intrinsic. The intensity of the colour indicates whether a measuring indicator was mentioned frequently (darker) or infrequently (lighter). All measuring points are illustrated with a quote from participants.

Annex 6.4 Before the Multispecies Safari

In the interviews preceding the Multispecies Safari, participants primarily valued wild urban nature as both relational and instrumental, based on the passionate immersion indicators.

Annex 6.4.1 Attention

Through the first indicator, **attention**, wild urban nature was mainly valued for a diverse set of instrumental values, but also relational and intrinsic valuations were present.

This is illustrated by the fact that almost all participants envisioned 'more green' instead of 'stones' in their neighbourhood, which they first found important for its instrumental use. Species mentioned for instrumental valuation were often not 'wild', but rather plants like flowers and trees, mainly for aesthetic purposes. Moreover, in relational valuation, wild species were more often mentioned, primarily animals that live alongside humans, such as birds and water-habitat animals, or even those that live inside the house, like mice. The use of space was less important, relational values highlighted the connections between people (emerging through being in nature), and species meaning, like the cultural stories told by some participants, for example, the folklore on how ring-necked parakeets arrived in Amsterdam. Intrinsic values mentioned included the biodiversity value of urban nature and the enjoyment of observing species. See detailed results in Table 26

Table 26. Additional descriptives results before: attention

ATTENTION - before			
Measuring indicators	**Instrumental**	**Relational**	**Intrinsic**
Descriptions of the environment	**Nature for human benefit.** Mentioned often in relation to ecosystem services. Participants wanted more green (in order of most often mentioned) for leisure, climate adaptation, aesthetics, (mental) well-being, and food sources	**Nature for connection.** Participants to like nature in the city because realize they are not the only ones in the city, there are also other species living in the house . also, to meet other people in urban green spaces	**Nature for itself.** Observing nature for the sake of it was done by some participants already.
	P11: *"I have the feeling that policy that is being made prioritizes the user higher than the intrinsic goal of the plant or nature itself"*	P1: *"I think it is partly awareness, that we as the human race, are not alone on this earth [...] and the non-human etnities by seeing them more often you get confronted with that".*	P6: *"just walking sometimes or biking that has happened a few times. That's very nice here also. Just going to the park and like sitting there in nature"*
Descriptions of species	**Species role.** Some species were seen as for human benefit, such as flowers, including 'weeds' (e.g., dandelions, sunflowers), to make the city beauitufl, and trees for air quality.	**Species meaning.** Urban nature is important for stories like folklore especially about the ring-necked parakeet and to become friends with other species	**Species for themselves.** Urban nature is good for biodiversity. Going birdwatching. Participants mentioned moss, bats, butterflies and house sparrows, but participants often named species without attempting to adopt a more-than-human perspective.
	P9*: "Air quality effects, mainly trees and the old trees are of course important for that. Yes, we also have to leave them especially".*	P5: *"You could spot like a weed as like it's perceived and as, like, a cultural norm and whatever society you're in. I mean, weeds are different here than they are even from where I'm from, you know?"*	P2 said, *"I find bird watching always funny, all those seagulls and such [...] all those pigeons I also actually find funny"* and P9 noted, *"I appreciate the trees, and plants, just for looking at it, I just find it beautiful, yes especially when it looks a bit differently*

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Objective descriptions of wild urban nature were barely given. Most participants were affected by communicating descriptions of wild urban nature, leading us to the next indicator, affect.

Affect was measured less in the earlier interviews compared to the journals and later interviews. This was because participants had not yet reflected on the embodied experiences of the Multispecies Safari activities, and instead focused on earlier affects related to wild urban nature that were more abstract and thus less connected to affect. Participants were ready to name species for their emotional well-being (instrumental emotion), but there were barely any quotations on 'response' in general, and no comments at all on 'empathy' (intrinsic emotion) or 'responses to engagement' (relational response). More detailed outcomes of the coding based on the four measuring indicators per value in Table 27.

Table 27. Additional descriptives results before: affect

AFFECT - before		
Measuring indicators	**Instrumental**	**Relational**	**Intrinsic**
Senses	**Sensory well-being.** Urban nature (unrelated to wildness) provided a way to soothe the senses and enhance (mental) wellbeing. It mainly involved 12 experiencing the diverse stimuli through sight and hearing, while smell and touch were once noted as lesser stimuli, and taste was not mentioned at all.	**Sense of connection.** Mindful presence was deepened through sensing other beings, though this concept remained somewhat vague due to limited intentional experience. Participants emphasized the importance of not taking nature for granted. However, there was minimal mention of a connection to more-than-human neighbors during nature experiences together.	**Non-interpretive senses.** General sensing as an intention for the activities
	P8: *"I think it can bring peace, also in the city. Already **hearing** the birds in the background, I think, oh yes nice, or **seeing** a green tree behind you".*	P7 did not experience nature together with other more-than-humans in the park: *"yes I run into other animals, but you **see** them rather shortly, I don't really say that I experience a sense of togetherness".*	*"just a lot of observing, what I **hear** and what I **see** [...] let myself be surprised by what I **see** and what I **hear**"* (P1), *"Walking around a bit every day, to **look** at new things I have not **seen**, or **look** closer*

Emotions	**Emotional well-being.** Finding nature beautiful in an ornamental way, missed when urban nature is not there	**Appreciation.** Participants appreciated nature emotionally through the realization that urban nature has its own speed, grounding feeling.	**Empathy** was not mentioned
	P12: *"Yes, that it [urban nature] gives oxygen, air, shadow, coolness, that it looks nice, so aesthetically, I find it very nice. The smell also, because I hear birds whistle, I find that very cute."*	P5: *"I really think nature exists at a totally different frequency and speed. So you really **have to slow down** because we're so intellectual now that we move so fast".*	
Agency	**Agency for (dis)services** mentioned for various species and various (dis)services, without attunement. Services for human benefit: mainly nonwild species -potted flowers and trees for beautifying, trees for cooling the air and blocking noise, and a blackbird for singing. Disservices: mainly wild species - trees and plants that give sticky substance or pollen, or that can fall down and destroy human property, mice and birds for pathogens by shitting in human living environment, and red swam crayfish, bamboo, and rats for being invasive	**Respecting other** more-than-human species was seen by some participants as a form of cohabitation, where humans permit nature to coexist either indoors or outdoors, depending on whether the species is a pet or a pest. This can involve managing environments to support a greater diversity of wild species within urban areas. However, there was also a concern that wild species might take over the city, potentially making it less habitable for humans.	**Autonomy in agency** was primarily recognized by participants in wild species, characterized by self-determination, spontaneity, and a lack of human management. Participants determined the role of more-than-humans in the city as 'just existing' and, when wanted, 'connecting to humans'.
	P3: *"the trees over here [...] they also grow wherever they want. And sometimes they make bumps in the street . But then again, the city will always fix that at some point it becomes too out of hand".*	P2: *"I have that a bit with mice, like, in principle I have no more right to exist in a place than a mouse. A mouse cannot read either so I can not make him understand property rights. But yeah, you find it annoying, so you put mouse traps".*	P14: *"just make fewer plans, and let nature be nature and develop itself. Don't let every centimeter be planned and built by landscaping companies. There are a few places in Amsterdam where it is less planned, and I like that".*

Response	**Response for (dis)services** was mentioned by a few participants that commented on attracting or repelling species.	**Response on engagement** was not mentioned.	**Autonomy in response** was not often mentioned but was found by some participants in the way wild urban nature, like plants, always starts growing.
	P9: *"you can make sure that your balcony becomes more birdproof, or start a vegetable garden, then you can get snails"*.		P6: *"the grass just goes from the ground [...] just wants to grow, and you have to, like, push it down or like, suppress it to not make it happen."*

Two notes regarding the individual measuring indicators for affect. It became clear that senses and emotions are closely linked, especially when recalling past experiences. Agency was primarily attributed to wild species, presented as 'x species does something.' However, understanding responses from more-than-human species was abstract for participants to consider, and thus was barely mentioned in the interviews beforehand.

Annex 6.4.3 Care

In the interviews before the passionate immersion activities, relatively many participants expressed ethical concern for urban nature, but talked less about their perspective or behavior in regard to wild urban nature. More details are given in Table 28.

Table 28. Additional descriptives results before: care

CARE – before			
Measuring indicators	**Instrumental**	**Relational**	**Intrinsic**
Ethics	**Prosperity.** Environmental actions that generated prosperity for humans, with little regard for other species. Human-managed environments were mentioned, like gardens and the streets, that show how humans treat urban nature, for example through landscaping for their own benefit or	**Stewardship.** all participants are aware of human actions in controlling nature. Sometimes the benefit for nature is unclear, like in the removal of 'weeds', trees, or 'intrusive' animals. Other participants mention making a (façade) garden as a way to contribute to the local ecosystem through place-keeping. So far, only one participant	**Kinship.** Some participants felt strongly that animals living in the city or plants in the garden have to be treated well, and sometimes that humans have to adapt to nature instead of the other way around, like make buildings more nature inclusive

	maltreating individual animals (e.g., by eating them)	explicitly recognized themselves as a steward, while many others were undertaking actions to care for nature through gardening or not killing animals	
	Urban trees as an indicator of wealth, P4: *"A friend made a joke, but it's true. It's a way to see if it's a rich neighborhood or a poor neighborhood in Sao Paulo and the cities. And that's a rich city and has a lot of trees. So people like like to be around trees and nature and stuff and just some some groups of people are denied of it because you have to pile them and make them like cheaper and stuff"*	P2 says that care starts by paying attention: *"but I think that if people would have a better eye for nature, then you could create a more beautiful city, that is also nice for other species, and for humans themselves"*	kinship was noted by P4 in seeing pet dogs in the street, saying *"if you put in comparison a dog in Amsterdam has the better, better life than most of people in the earth now you know"*, as the dog is very well taken care of. However, in relation to wild urban nature, P10 said, *"sadly human activity means only taking and exploiting and not collaborating with, or living in harmony with nature, so that it will not really be wild nature again"*
(Changed) perspective	**What nature should bring to people.** Overall overlap with urban natures' services, e.g., nature should be taken care of for climate adaptation measures or for leisure. P14 critiqued the current way the city patronizes urban nature, e.g., through the municipality constantly pulling weeds in a historical "well-kept" neighbourhood (P1).	**Connection to nature.** Participants mentioned having spiritual connection to wild nature through relating to its time path, or expressed the need to have a connection to nature as part of one's identity was mentioned	**Similar value.** Participants mentioned knowing that they are 'part of nature, just one said that that means 'not above nature', and one found that hard to feel in the city
	P3 critiquing how people treat private gardens *"you have this beautiful garden, possibly beautiful green garden. And what do we do instead? We put some tiles on it. We slap some concrete on it and we turn it into another grey area for us to sit in"*	P1 *"if I am stressed or anything, I realize, the world keeps turning, you hear the birds sing, everything continues in its own rhythm"*.	P8 did comment she wanted to learn more about her position she said *"I think we put ourselves too much above nature while I think that nature is so much bigger than that we are"*, on which P1 added that *"humans are part of nature, what is important is that humans start seeing themselves as part of nature and not outside of it"*
(Changed) behavior	**Pro-environmental behavior.** One participant mentioned wanting to greenify	**Seeking relation.** By participating, some set the intention to go outside more in parks to	**Minimizing impact.** a few participants picked up behaviors in minimizing impact on

his area with neighbours and a few mentioned gardening of visiting the park	seek a relation to nature, some think they do not go outside enough yet.	urban nature (P6: not eating meat), and some were aware of what interventions could be taken (P8: mow less, no pesticides, more space), but did not do that themselves
P13 giving the example that we are always in relation to nature, and have to keep the relationship healthy to keep ourselves healthy, like with water *"because you put effort in the relation, you better know what water needs to stay clean, and meanwhile you experience what cleaner water that is better for your body, you pick the fruits from that"*	P5: *"there's always distractions to our attention to nature because it kind of operates at a different frequency and at a different scale than we do. So it's always good to be in the habit of practicing observation".*	P15: *"well the cat, he is a bit our family and brings in some other animals inside too, like birds or mice, yes especially what I see in the garden I try to leave it be as much as possible"*

Annex 6.5 During the Multispecies Safari

Passionate immersion with wild urban nature was achieved through the Multispecies Safari, where participants thought they found it, primarily in parks, gardens near their homes, between tiles in the streets, and next to water bodies. For examples, see Figures 22, 23, and 24, and for more detailed descriptions, see Annex 6.3.

In general, the journals of the participants reported on the direct embodied experiences, making it easier to apply the code structure of the measuring framework to them in comparison to the more reflective interviews. Overall, affect was more frequently recorded in the journals across all valuations, and relational and intrinsic valuations were more prevalent than instrumental values, especially when encountering more-than-human individual species that were often wild. More detailed accounts are written below.

Participants' attention was primarily focused on individual species rather than the environment as a whole. See more in Table 29.

Table 29. Additional descriptives results during: attention

ATTENTION - during			
Measuring indicators	Instrumental	Relational	Intrinsic
Descriptions of the environment	**Nature for human benefit.** Enjoying the environment for wellbeing was mentioned by P13	**Nature for connection.** Mentioning feeling connected with the environment around them (P1 & 7)	**Nature for itself.** Participants were sometimes just sitting around, interpreting the environment for the sake of it, especially in activity 1 'sitspot', activity 2, 'sitspot with eyes closed', and activity 8 'look at the sunset' (P1, 13 & 15)
	P13: *"I was at the Gaasperplas for the first time last week. It was really cool. It is very beautiful there"*.	P12 noted *"also my own stomach rumbling amongst the surrounding sounds, made me realize how my own body is part of city nature"*.	P2: *"I was surprised about how green its was and how many colours of green you see. I don't know itf it had to do with the weather"*.
Descriptions of species	**Species role** was not mentioned.	**Species meaning.** mainly the relations with and between other beings were frequently quoted in the activities, e.g., activity 2 'sitspot with eyes closed', 5 'draw another being' (like P8 in the quote) and especially activity 7, 'look at the bark of a tree' helped participants recognize both the interrelations between species (tree bark-insect)	**Species for themselves.** All participants described individual species to immerse themselves with. For example, in activity 1, the 'sit spot', participants observe other species *for their own sake*, they saw dogs, flowers, trees (P1), ducks, birds (P1 & 6), like pigeons (P3, 4 & 13), whose movements and possible emotions they described
		P8 about Figure 12 and 15: *"a large tree that hangs in the water, a bird flies by and lands on the grass, a duck swims in the water, and another coot arrives swimming. Sometimes people pass by. Low plants and small flowers grow around the tree"*	P6: *"I see birds, ducks, and geese swim around in the lake, occasionally diving under the water, then suddenly appearing again at a distance. From time to time they meet, converse, touch and quarrel, only to part again and continue searching for food as if nothing has happened"*

Affect was frequently mentioned in the participants' journals as a direct reflection of their embodied experience of immersing in wild urban nature. As main findings, visual and auditory senses were most engaged, especially with trees and birds again, which could be wild or not (the participants did not specify). Agency was not explicitly mentioned, though participants did show wild species in pictures (Figure 13, 14 , 20, 21 & 22). More in Table 30:

Table 30. Additional descriptives results during: affect

AFFECT – during			
Measuring indicators	**Instrumental**	**Relational**	**Intrinsic**
Senses	**Sensory well-being.** Mainly visual sensations (*watching a sunset, plants, and birds*) were related to beauty for human benefit, but also touch (*sun*) and smell (*plants and flowers*) contributed to (mental) wellbeing. Less frequently mentioned but disliked sensations were sound (*general overload, specifically cars*), touch, and smell (*trash, urine*).	**Sense of connection.** Deepened connections were fostered by engaging with urban nature through the senses: seeing and touching species such as trees, grass, and birds, and observing the sky. Mindful presence was again driven by connecting to the rhythm of the wild urban nature found.	**Non-interpretive senses.** General sensing without human interpretation was explored with awareness in activity 1 'sit spot' and 2 'sit spot with eyes closed'.
	P6 journaling about seeing beauty: *"a beautifully coloured duck swims to my left. Dressed in orange, green and brown, they carry all the warmth of an autumn day on their body"* and P1 journaling about disliking touching trash during activity 3: *"I found it very gross to do, so I did not do it for long. I was constantly like, I want to wash my hands"*.	P6 writing about activity 1 'sit spot': *"I am moving together to the pulse of the wind, the water, the earth, and the sun. I feel as if I'm slowly finding my way into this movement, my mind drifts from its own time and joins the measure of nature. A moment of presence"*.	P14 doing activity 2 'sit spot with closed eyes', activated listening: *"I was surprised to find out how many I can hear. [...] At any given moment, there was so much singing going on that it was impossible to discern just how many birds were singing and where the songs were coming from"*.
Emotions	**Emotional well-being.** The primary emotions were calmness and surprise, but annoyance with cars and shame over trash were also present.	**Appreciation** of urban nature causes happy and grateful emotions, as mentioned by almost all participants (especially in activity	**Empathy**, as the measuring indicator, was noted once mixed with sadness when P10 found a dead chick. The emotions arising

		11 'greet other species'), and an increased sense of place.	from overall sensing included calmness and surprise at the number of species.
	P7: *"I feel a bit calm and restless at the same time. I get happy from birds and sitting calmy, restless from the multitude of urban noise: airplanes, cars, trains, boats, I was able to hear that all"*.	P13 doing activity 6 'walking barefoot' stating *"so I was walking around barefoot in the Vondelpark and then I was lying for a bit and I imagined like, I am on earth and the whole earth is a globe that is carrying me. Then I felt really peaceful"*.	P10: *"I had seen the mother bird brooding the egg earlier in the season. So to now see it being dead and already moving on to the next part of the cycle is a little sad"*.
Agency	**Agency for (dis)services.** Specific species were mentioned for various services (e.g., beautifying), but mainly disservices (e.g., dog poo, plant pollen, mouse diseases).	**Respecting others.** Only a few participants mentioned more-than-human species as cohabitants, by being present in human life.	**Autonomy in agency.** Only a few participants recognized more-than-human self-determination in the journals.
	P13: *"I was biking in the park and then many flies ended up in my eyes, well then I cursed them out"*.	P15: *"the blue tits that live there are always very observant and look around nervously. Even now it seemed that mom or dad was looking at me and there was a moment of contact. That felt like a connection. I saw them and they saw me. And we live next to each other"*. See Figure 23	P1: *"nature is just freedom, it is trueness, pureness, it does not pretend, it just is"*.
Response	**Response for (dis)services** was barely mentioned. One participant tried to attune by asking if a flower can smell him back, but mainly there was no attunement.	**Response on engagement.** Participants received responses from other species during the activities as they answered the journaling prompt 'did you get a reaction from a more-than-human'. Reciprocity came from pets, birds, and an insect. The participants used human language to describe responses.	**Autonomy in response.** With agency in response, participants tried to understand the livelihood of more-than-human species, especially birds, which were often focused on. For example, in activity 13, 'being another being', and activity 11, 'greet and appreciate another species'. Rain and sun were also recognized as world shaping.
	P13: *"I believe Nala [the cat] found me very annoying, she did not like being touched. She scratches very soon all the time."*	P6: *"a dog suddenly approaches me, frantically wagging their tail they climb into my lap. So free and full of love, shamelessly trying to kiss a stranger"* using human language to describe the interaction.	P10, talked about ecosystem engineers as shapers of the world with a friend (activity 9), and thought, *"I think that ecosystem engineers especially would say to me that there are many ways to affect a system if you learn to read the system"*.

Figure 23. The blue tit in his residence, neighbouring P15. Source: P15

Annex 6.5.3 Care

In the journals of the participants, instrumental valuation of urban nature in care was not very present, relational values were more often present, e.g., participants felt concerned and more aware about the negative human impacts on other more-than-humans. Then, through some participants' material connections and attentive interactions, they to realize their impact on their surroundings and felt ethically responsible to it. More in Table 31:

Table 31: Additional descriptives results during: care

CARE – during		
Measuring indicators	**Instrumental**	**Relational**	**Intrinsic**
Ethics	**Prosperity.** By doing activity 3 'pick up trash' some participants reflected on humans polluting the environment, with both a negative impact on human livelihood as well as other species.	**Stewardship.** In behavior, some participants did actions like gardening or not gardening: leaving plants be, others collected trash (activity 3).	**Kinship. F**elt by some participants when drawing out their material connections (activity 4) for . Through these material connections, they felt an ethical obligation for it
	P3: *"Luckily I had an extra bag with me because what caught my attention was the lack or trashcans in the streets [...] also trashcans are open and have more trash around them. I can image this attracting 'pests'"*	P8 after writing a poem about the weeds in form on her house (activity 12): *"I have renewed appreciaton for the weeds against my house that I will let go instead of take it away – why because it does not look nice?"*	P10, walking around in a very noise place said: *"Although the plants and microorganisms are stuck in this location. Which means we might have to help them a bit by shielding them from the noise"*

(Changed) perspective	**What nature should bring to people.** In drawing the material connections (activity 4), P6 realized her human livelihood depended on nature through supplying material goods, thus instead of linking to the measuring point 'what nature *should* bring to people', she felt indebted	**Connection to nature.** People realized their material connnections, and their spiritual connections more, by tuning in more to the rhythm of the life around them, for example, looking at a tree or a sky full of stars made participants feel small	**Similar value.** Through observing, some participants felt like being among many with similar value
	P6: *"All there is is the ink, the forms and the words, the empty space between letters, the lines I make with the pen, but rarely the paper itself, the processed wood that enables all these things to appear. So indebted my intellect is to these trees that give themselves (or we rather take them) to man, so it can externalise its mind"*	P8 said about activity 4 'draw your material connections': *"although you think you know it, mapping it out like this makes that you have way more relations to nature through everything you use, eat and wear. This gives an extra reason on how to treat this with more awareness"*.	P2 actioned upon this by not eating meat, saying *"I'm vegetarian, although, I try. But it has to do with, well if you just look at an animal, you're thinking like, yes, that is a just a being, just like me actually"*.
(Changed) behavior	**Pro-environmental behavior** linked to keeping plants by P1	**Seeking relation.** Overall, participants observed their environment more attentively and felt a stronger connection to nature because of that. Participants sought the relation with nature through the activities, but also started related more to other humans, for example by doing activity 9 'talking to others about nature'	**Minimizing impact.** P1 reflected on impact with activity 10 'your influence around your house', and found it hard to understand whether he had a positive or negative influence, but tried to limit his impact
	P1: *"people have all these plants standing outside in bots. I don't have that, its hard and I don't have much space but it would be possible [...] it could make a positive impact"*	P9 talked with a friend about nature: *"we asked each other questions about nature, wat our connection is and wat we like about it, and also ow we use it in daily life "*	P1*: "I don't think I have a negative impact on my environment, but I also don't know f I have a very positive impact either"*

Note: pro-environmental behavior not mentioned in terms of change, but participants did do activity 3 'collect trash'', so that activity can be considered pro-environmental behavior. P3 did not journal on it. P1 found it a disservice that it was gross. P7 did not reflect on the action itself. P14 was categorized as place-keeping.

Annex 6.6 After the Multispecies Safari

Reflecting on the the Multispecies Safari activities in the interviews afterwards, the overall direct effect on the participants was increased awareness. Everyone mentioned that participating in the activities developed a heightened sense of awareness, allowing them to notice more life in the city. For some, this was simply a more open and attentive mindset; for others, going outside and engaging in an activity contributed to increased awareness. Still, for others, journaling had contributed to noticing more (having to report findings), like P11: *"you are more aware by having to write something down rather than just letting the experience happen and pass by"*. Overall, participants most frequently mentioned birds and plants (including trees), consistent with the earlier interviews. However, unlike before, they now described the outdoor species they encountered during the activities, with greater awareness of their presence and whereabouts, rather than hypothetical examples.

The Multispecies Safari was conducted in locations of choice, where some participants required a greater presence of wild urban nature than others. For the measuring framework, participants more equally valued wild urban nature for plural values. In addition to mainly valuing wild urban nature for instrumental or relational values like before the activities, participants now also recognized intrinsic values more. Again, this depends on the category, as explained in more detail below.

Annex 6.6.1 Attention

Attention was crucial for the Multispecies Safari, and most participants reported encountering more wild nature and a greater diversity of species in the city, which they valued more in a pluralistic way. More in Table 32.

Table 32. Additional descriptives results after: attention:

ATTENTION - after			
Measuring indicators	**Instrumental**	**Relational**	**Intrinsic**
Descriptions of the environment	**Nature for human benefit.** Participants value urban nature mostly because it looks nice, most prefer urban nature over stony environment. Trash was experienced as making the environment less appealing	**Nature for connection.** Most participants having a stronger sense of place but for one participant not, as he had realized he does not feel at home anymore due to the lack of urban nature	**Nature for itself.** Participants discovered the diversity of nature, many new species that are just living in the city too

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	P14: *"Amsterdam is a very dirty city with a lot of trash, that I don't see in other cities"*	P12 felt encourage because of participating to research the design of her builing: *"I feel connected to my environment and I started deepening out the plans of how my neighbourhood was designed [...] now I can enjoy it more"*	P2: *"you just don't pay attention, and when you do, there are so many different things. Also to myself, I was thinking, ah, I have no clue what is happening here, what kind of plants these are [...] you just see plants that you don't understand anything about"*
Descriptions of species	**Species role.** More green, e.g., flowers to make the environment look beautiful, trees for people to relax and immerse with	**Species meaning.** Relations *between* more-than-human species were also found to be more apparent, especially when looking at the tree bark (activity 7)	**Species for themselves.** Some participants looked more to individual species in the environment as well, with intrinsic values: trying to understand the species from the more-than-human perspective, e.g., realizing this in doing activity 7, 'look at the bark of a tree'.
	P10: *"I found places where wild nature was a spontaneous addition to what people were already doing there, [...] but I think it was supposed to be a beautiful tulip flower box"*	P1 feeling a connection through other species in it, during a conversation with ducks that came up to him in the park during activity 11, 'greet and appreciate other beings'. It made him realize *"it places you more in connection to others, not just in nature but with other beings in nature"*. However, he also felt a barrier to deeply connect in the communication with the ducks, which he felt less with his cat, *"so yeah maybe if you spend more time with the duck or with whatever animal you start understanding them more, but there will always be a barrier, since you are other beings".*	P8: *"small things in urban nature catchd my attention more, for example the pigeon sitting in his nest, or that there are pigeons everywhere to begin with, or small flowers"*

Still, descriptions of environments and other species (the measuring indicators) were mentioned less frequently. Based on the codes, wild urban nature was more plurally valued, mainly due to a decrease in instrumental value orientations compared to previous interviews. For example, all participants wanted more nature in the city, some for its appearance (instrumental value), but most to develop a connection to nature (relational) or to allow more-than-human species to live and find shelter (intrinsic). Other intrinsic values included observing wild nature for its own sake, like weeds

or birds, exemplified by P2 finding more species of birds than only the expected pigeons, *"I saw all these small birds of who I thought, what are you doing here?"* and later concluded *"you just don't pay attention, and when you do, there are so many different things"*. Relational values were also reflected in a stronger sense of place attachment experienced by participants. These were driven by the recognition of relationships between themselves and more-than-human species (such as trees and birds), as well as interactions among different species, which were now noticed with greater awareness than in earlier interviews. Also, as in earlier interviews and journals, participants reflected after the Multispecies Safari that this attentional awareness led to affect.

Annex 6.6.2 Affect

Affect was more pronounced in the interviews afterwards than before as participants had reflected on their lived experience, but less often quoted than during the Multispecies Safari. Through the indicator affect, participants appreciated wild urban nature in a more pluralistic way. However, sensory engagement and emotions were still valued mainly instrumentally and relationally. Additionally, agency and response were more clearly expressed through the intrinsic values of urban nature, particularly in mentioning wild urban nature. More in Table 33.

Table 33. Additional descriptives results after: affect

AFFECT - after			
Measuring indicators	**Instrumental**	**Relational**	**Intrinsic**
Senses	**Sensory well-being.** As before, half of the participants again indicated that focusing on nature as a stimulus brought them 'peace' and 'calm', with listening to birdsong or looking at plants providing wellbeing benefits. Car-free areas were enjoyed more, as the sounds were not impeding the experience.	**Sense of connection.** Sense of place through deepened connection by attentiveness: noticing new species by seeing and hearing. Impeded by the fast pace of life, a few participants struggled to be more mindful.	**Non-interpretive senses.** Wild species were observed without interpretation, such as noticing their growth in spring and smelling them.
	P12: *"I am a passive enjoyer"*.	P6 intended to be more present to the environment before the activities, and in reflecting, this worked out: *"because before*	P5: *"the plant is kind of mid bloom or has parts of it which is still sprouting, [...] you know it's doing*

		that, I think when I was outside, there was more using the calmness of my environment to observe myself, but not necessarily observing my environment. And now it was more... just more attention to like, you know, what surrounds me and not to myself".	*something. [...] You're watching something happen in real time, but you can't perceive it."*
Emotions	**Emotional well-being.** Surprise over nature coming into bloom during the Multispecies Safari period. Wild nature, in particular, was found beautiful now.	**Appreciation** for the environment grew for many participants as they realized the presence of urban nature, especially in the budding spring.	**Empathy** was felt for animals having to crawl around or eat from trash. P5 pointed out that it is a uniquely human power to empathize.
	P9 on wild urban nature: *"I think many people find it ugly and think 'this has to go'. And in that case, I think, yeah, that grows there, that is also beautiful".*	P8: *"there are many more places than you think to find nature in the city [...] it makes me happy, especially now is the perfect season for it, there are flowers and things that come into bloom. That is nice, yes".*	P3: *"They [rats and mice] don't know the difference between the trash can and a five-course meal. Because it bothers us as humans, should we disturb that for them? I started feeling like empathy for rats and mice, like, if I take away this trash, what are they going to eat?".*
Agency	**Agency for (dis)services.** Services recognized were of trees, disservices were again zoonotic diseases, presence of mice, crows, or rats	**Respecting others** as co-inhabitants was done by many participants with different gradations of recognizing more-than-human agency and relation to humans.	**Autonomy in agency.** Participants had reflected on this especially for wild plants.
	P2: *"there are pigeons shitting over my balcony all day. I find nothing as gross as pigeon poo, because I am scared for the diseases from pigeon poo".*	P3: *"there's animals we've accepted into our life. Cats, dogs, bunnies. Whatever pigeons in my dad's case, and we tolerate that, and we take care of it even. And then there's stuff that we feel is like, dangerous gross, whatever. And yeah, we choose not to coexist with it".*	P7: *"I realized, we have a very strong urge to relate to other plants based on their characteristics, on how Linnaeus had determined them for us. While you can also relate to a plant... just be with a plant. Like, this is the plant that we buy in the garden center and plant to look at, and this is the plant that grows up by itself and we ignore it or something".*
Response	**Response for (dis)services.** There was no attunement for the few disservices mentioned here, only some for P1's pet.	**Response on engagement** was difficult to understand for participants after the Multispecies Safari. Reflecting on it, participants realized the independence in agency from others, but how some	**Autonomy in response.** All participants recognized autonomy in response, as no participant demanded a response from another species; they mostly just tried to be aware if there was a response from another

		participants wanted to relate to others, e.g., through a reaction.	species, which was often not the case. Some participants tried to understand the livelihood of others.
	P1: *"with pets, with cats […] it feels like a mutually beneficial relationship or something, the pet likes that you give it food and care, and you like it because it gives you joy"*.	P3: *"There are life forms that don't care about us. The ducks don't care about us, you know, they're in their piece of water, and that's their reality. Of course, there is nature around. And the ducks are not being controlled by humans"*.	P12 tried to shift her perspective, saying, *"I thought about it a lot. I think it is also interesting to reflect on what kind of roles less popular species have, like certain insects or rain flies, or whatever. It is kind of an eye-opener to see them without the view of like, they need to leave my place alone, but looking like, what do they actually do, and what do they need to live?"*.

Thinking with big topic: care and response very intertwined. This already goes into perspective shift - first not apparent but after reflection and PI of the participants this is more apparent.

More encounters but hard to find language to explain. For participant 1, awareness of his connection to the environment came up when connecting to other species in it, during a conversation with ducks that came up to him in the park during activity 11, 'greet and appreciate other beings'. It made him realize "it places you more in connection to others, not just in nature but with other beings in nature". However, he also felt a barrier to deeply connect in the communication with the ducks, which he felt less with his cat, "so yeah maybe if you spend more time with the duck or with whatever animal you start understanding them more, but there will always be a barrier, since you are other beings".

Relational reciprocity was still human-centered = what has this animal have to do with me? A tension between independence and being affected (does the human have anything to do with it, a flower grows without humans blessing anyways. after reflecting on the Multispecies Safari activities participants highlighted a tension between agency of more-than-human-species in independence of humans, some processes of urban nature humans can relate to but exist

Annex 6.6.3 Care

Then, for the interviews after the passionate immersion activities, participants valued urban nature instrumentally by reflecting on their ethical responsibility, for example for trash. Also overall, people's relation to nature intensified due to the passionate immersion activities, by being more

aware of its presence, but also the meaning of it to their human lives. For intrinsic valuation of nature, participants did not mention real kinship, but they did show more awareness and respect for other species and their impact on urban nature. More in Table 34.

Table 34. Additional descriptives results after: care

CARE - after			
Measuring indicators	**Instrumental**	**Relational**	**Intrinsic**
Ethics	**Prosperity.** Many themes arose around property, again coming back to trash and how people are messy and the municipality is trying to keep the city clean, including from 'weeds'. Other participants encouraged to enjoy nature that is already there, but also how humans try to oppress it simultaneously	**Stewardship.** Many participants expressed feeling concerned about urban nature, e.g., the need for shelters for animals in cities, pointing to a planning issue that affects urban nature. Participants felt like a "custodian" or "steward" in becoming aware of this role through the activities, and many thought management of urban nature is needed.	**Kinship.** Not many participants shared that they felt a sense of kinship with another species. Some participants had pets (e.g., cats) and one participant was a bee-keeper, but only P1 had reflected on the communication with his cat as mutual
	P3 thought that humans have a collective responsibility, as picking up trash felt like a rather useless undertaking on an individual level *"everything I pick up now and I remove somebody else is gonna, you know, I'm gonna turn around and somebody else is like, who doesn't give a shit. It's just going to throw something on the street [...] Yeah, it has to be done as a collective"*, later pointing to the need for systemic change to bring prosperity to humans which also cannot by done on an individual level *"I don't feel like or our observations about birds or something really did something to make an impact"*, as in the end,	P10 saying: *"I think in an urban environment you have to be more hands-on, because there are so many negative human impacts that you have to do something as a human, to make it also positive. If we are talking about rewilding or conservation, then I think we have to be more hands-off".*	P10: *"If there are other species in my life, I have more the feeling that my surroundings are more alive, you know? I mean, I would never murder a spider or flatten an ant"*

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	P3 says that *"humans always want to control everything around them"*		
(Changed) perspective	**What nature should bring to people.** Participants reflected on their perspective on nature as a consumer, e.g., the experience by visiting a park, honey by keeping bee.	**Connection to nature.** Some participants will continue connecting with other people over nature. Others felt time m ore stretched out in the activities or were able to put live event into perspective through connecting to nature.	**Similar value.** Participants found themselves in a lively ecosystem by being more aware, which made them value other lives more.
	This perspective comes from out upbringing, according to P4: *"In the society that we live that we are born, that we're made, it's hard to to see it this way. [...] we were not born In the nature you know, like in completely like coexistence with nature. So it's it's even harder for us to understand. For indigenous like it's they don't, they don't have weekdays."*	P5 realized the scale of life by saying *"it brought my attention down to more of a micro scale, like a scale that is, you know, much smaller than we normally exist in [...] the scale of an ant or the scale of a tree, two totally different scales, you know. But you really understand that there's whole kind of ecosystems operating on totally different time scales than you and and physical scales than you".*	P1: *"it is just nice to see that nature is alive, and that all the animals and plants and whatever, have interaction together and are just there"*
(Changed) behavior	**Pro-environmental behavior.** Collecting trash, an planting flowers on the balcony is pwhat participants did.	**Seeking relation.** Awareness of nature had made participants realize they wanted to seek a nature connection further. Many participants found themselves looking more for nature, one discovered she could not find it on Dam Square, and another noted that you have to actively decide to find wild nature to find any.	**Minimizing impact.** Participants wanted to let other species mbe more, and minimize their own harm.
	P7: *"Collect more trash. I already did that when hiking, I took a little bag [...] but since yesterday I do it more often, without shame"*	P3: *"I think for me, it's like when it's [nature] around, I'm more aware, but when it's not around I found myself looking for it more."*	In visiting a piece of wild urban nature, P14 said *"I had the feeling that I really had to pay attention that I did not break anything, not hurt my environment"*

Notes: P3 & 8 regretted not taking more time for nature in the activities, while P2 found that nature already gives him enough in a short time frame. These reflections on the ethical responsibility of humans towards urban nature, and what nature should bring to people, highlight tensions between individual and collective responsibility, and the current ideas to be well-balanced or in need of change.

Annes 6.7 Summary main results

Instrumental values were prominent before the activities: participants valued urban nature for human benefit, such as aesthetics, leisure, and climate adaptation. Descriptions focused on managed environments, like gardens and clean streets. Sensory experiences (e.g., listening to birds, seeing and smelling flowers) were tied to personal well-being. Actions like gardening were seen as individual efforts to improve human environments, with limited reflection on more-than-human needs.

Relational values increased most clearly through the Multispecies Safari activities. Participants reported a stronger connection to nature, deeper place-attachment, and a heightened awareness of human impact. All participants began observing species more attentively. Some described themselves as custodians rather than owners of nature, expressing stewardship and ethical concern, and some started talking about nature to others more. Shifts in perspective emerged, as participants described their relation to nature more often and wanted to seek out these experiences again.

Intrinsic values were less frequently coded but did emerge through deep observation (e.g., tree bark) and reflections on cohabiting with other species. A few participants expressed empathy or recognition of agency. While kinship with nature remained rare, awareness of being part of a larger ecosystem grew. Emotional responses were subtle, often tied to calm observation rather than explicit moral shifts.

Annex 6.8 Feedback for the method

Participants were also asked to give feedback on the method of passionate immersion, meaning the Multispecies Safari activities that they had partaken in, but also on the surrounding logistics, such as the breathing exercises and journaling prompts, closing with limitations.

The **activities** that the participants did are shown in Table 35. Activity 1 was done most often, after which activities 2, 3, 5, 9, 12, and 13. However, judging from the interviews after, activities 7 'look at the bark of a tree' and 4 'draw your material connections' were mentioned as most impactful. The favourite activity of the participants was also activity 7 (shown in pink), but activities 1, 9, and 12 were also popular. Participants were free to choose which activity they did when, but most started with activity 1. One participant (14) planned to do them consecutively but didn't make it, and only one participant (1) managed to do all the activities, chosen in free order. P1 liked them all, except for 3 'pick up litter', but picked the least liked activity last, which took more effort to undertake. Barriers for participants were time constraints, forgetting to schedule it, or not feeling like it. For some, 'having to do' the activities held them back, and they mentioned continuing afterwards without having to journal (P9 & 12). External factors like weather and public holidays were also barriers. Some mentioned good weather encouraged going outside (P6) and vice versa (P6 & 10). Two public holidays occurred during the Multispecies Safari, Easter and King's Day, on which almost none did an activity. However, it also occurred that participants did an activity without realizing it, and later reflected on it in the interviews. The researcher reminded participants every 3 days in the group chat, which was received as encouraging.

Then, the **breathing exercises** helped participants get relaxed and built a routine, as envisioned. They also encouraged participants to do switch into the mood of doing an activity (P1). Some participant did not do the breathing exercise (P3, 4, 5, 11), the rest did. Visualizing the oxygen exchange with the tree, as part of the breathing exercise, was done by half of the participants. For some it helped as a visual reminder of the connection to nature (P2, 6, 10, 13 & 14).

Journalling made participants reflect better in general (P1, 6, 8, 10), and for P5 & 6 this as her favourite part of it, turning it into poetry. Other participants found it harder to do a written journal, after which they switched to sending voice notes (P2 & 9) or videos (P3 & 4). Some found journaling hard, which made it a barrier to share the reflections of the activity (P2 & 12). Answering the same questions also formed a ritual for some participants. The least answered prompt was 'did you get a response from others?', as it was sometimes unknow wether a other more-than-human species reacted, and how to interpret that.

As last remarks, some confusions and dislikes. Some participants found the combination of the daily activities, answering the journaling prompts and choosing an activity confusing. They were unsure whether doing one daily activity already counted as participating, or whether they had to do the combination (P7, 12 &14). These participants reached out to me and I explained again. Also two participants complained that the activities were written down in a mega-long list, they would have preferred 2-3 options per day to choose from (P5 & 9). For the communication, nobody complained about using WhatsApp or Signal, but two participants (13 & 15) did not like to reflect on the phone and preferred a paper journal.

Table 35. Overview of activities done by the participants (green) and their favourite (if applicable, in pink).

Wich activity did you do?		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Activity		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Sit somewhere outside for 10 minutes and observe your surroundings by watching.	pink		green	green	green	pink	green		green	green	green	green	green	green	green
2	Sit somewhere for 10 minutes with closed eyes and observe your surroundings by closely listening to all the other beings around you.	green					green	green					green		pink	
3	Walk around in your neighbourhood and pick up litter, think about how it affects species (animals and nature) who live there.	green		green	green			pink						green		
4	Draw or list all the ways you're connected to nature through the things you use (like food, clothes, or energy). Map your ecological connections like that.	green					green		green							
5	Find an animal or plant and look at it closely, write or draw what you notice.	green	green			green			green	green		green			green	
6	Take off your shoes, walk barefoot outside, and feel the ground with your hands. Lay on the ground if you want. Try to communicate with the earth.	green					green							green		green
7	Look closely at the bark of a tree and find as much different lives as possible.	green	pink			pink	green						pink			green
8	Watch the sunset and gaze at the stars, reflect on your position in the universe.	green												pink		pink
9	Talk about nature with someone, e.g. about your favorite plants or animals, and describe or ask why. Also incorporate natures voice: what would these species have to say to you?	green				green			pink		pink	green				
10	Reflect on your influence on the surroundings around your house. Try to imagine all the connections you have to the others around you.	green												green		
11	Greet other species you meet and tell them something you appreciate about them.	green									green			green		green
12	Write a poem about nature that involves other species.	green					pink		green		pink	green				
13	Imagine being another specimen (e.g. a pigeon, a squirrel, a dog) how would you feel in this place? Consider their perspective on your being there and the others being out there as well.	green	green											green		
14	Co-create an artwork with other bodies: natural materials that you can find.	green					green									
15	Reflect on places where you are rooted and had positive nature experiences, how have these places shaped you?	green												green		

Annex 7: Informal expert interviews

These informal expert interviews were held over the course of the study to get informed on the field and the relevance of the research direction.[3]

	Date	Organization	Who	Topic
1	26/10	WUR, WildE project	Angus Monroe Smith/Arjen Buijs	NFF framework (relational values)
2	12/11	Guerrilla gardeners	Joelle Baijer	Ecosysteem therapie
3	3/12	WUR, PhD	Cathrien de Pater	Spiritual side nature
4	17/12	Global Rewilding Alliance	Will Kelsey	Urban rewilding
5	17/12	Wilde Stadscafe	Cathrien de Pater	Spiritual side nature
6	3/1	Global Rewilding Alliance	Alister Scott	Urban rewilding7
7	10/1	Design thinking	Cor Noltee	Bosbaden, 'rewild yourself'
8	15/1	WUR, Phd WildE	Ravi van de Port	Urban rewilding
9	22/1	Natuurhistorisch museum R'dam	Niels de Zwarte	Stadsnatuur, percepties
10	12/2	NYMA	Jos Rademakers, Kelvin Klaassen	Practical urban rewilding
11	18/2 18/4	Gemeente Amsterdam, PhD	Charlotte Mooij	NFF in stadsnatuur
12	18/2	Waag Futurelab	Judith Veenkamp	Internship intentional looking
13	25/2	WUR, PhD	Florian Albronda	Attitudes towards urban nature
14	4/3	KTH	Sara Borgström	Human-nature relationships
15	4/3	PBL	Machteld Schoolenberg Lizzy van Megen	NFF in Dutch policy
16	4/3	Nature positivist, speaker for the living	Thijs de Zeeuw	Multispecies futures
17	15/3	Ecologist	Harold Timans	safari tours through nature
18	24/3	Botanist, NbS	Marcus Collier	Multispecies justice
19	9/4	TUD Urbanism	Symposium	Representing the more-than-human
20	14/4	Radboud Universiteit, Earthfullness stichting	Riyan van de Born Bernadette van Heel Arjen Berkhuysen	Earthfulness challenge
21		WUR Antropology	Clemens Driessen	More-than-human rewilding
22		VU, PhD	Debora Solomon	Multispecies Urbanities
23		WUR	Oona Morrow	Passionate immersion in practice

Table 1. All informal interviews held for this research with experts on parts of the topic. Note: last three interviews did not take place as they were cancelled but not rescheduled.

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[3] This annex is not referenced in the document, as it is only supposed to be viewed by the examinators of this thesis to protect privacy of interviewees (I did not agree with them to put their names in my thesis)