

The Human-Nature Relationship in Germany: Nature Connections and Disconnections in Urban and Rural Areas.

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Abstract

This study investigates modes of nature connection and disconnection with the help of a comparative case study approach of an urban and rural area in Germany. 24 qualitative interviews with residents were conducted as well as 10 interviews with practitioners from both case study locations.

The study found little difference between urban and rural respondents' relationship with nature. Findings demonstrate that respondents from both case study areas were emotionally connected with nature. Urban as well as rural respondents demonstrated (high) level of mindfulness and affiliation with nature, which indicates that where people live is less definitive for people's nature connection than scholars assume. Cities are therefore not necessarily places in which the human-nature relationship atrophies. Findings show that the increase in people's health and wellbeing intensified people's appreciation and strengthened their bond with nature, which became even more relevant during the COVID-19 pandemic. This highlights that feeling emotionally connected with nature is also fundamental for people's emotional and physical wellbeing.

Findings demonstrate that people's lack of knowledge and awareness were reasons for people's careless behaviour and unsustainable consumption. Nature connection did not increase ecological wellbeing nor increase pro-environmental behaviour beyond recycling or reducing plastic use. The high number of respondents, who tried to reduce their ecological footprint, however, demonstrates a growing environmental awareness and concern in both case study areas. This study emphasises that people's inability to care and look after nature was not only a personal choice but also a structural/societal problem that reduces nature and nature conservation from a necessity into a 'hobby'. In order to achieve better conservation practises and biodiversity, this study argues that we cannot only rely on individuals' nature connection but must incorporate political changes, to reverse the societal disconnection that reproduces and reinforces disconnection from nature.

Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

I give permission for the digital version of my thesis to be made available on the web, via the University's digital research repository, the Library Search and also through web search engines, unless permission has been granted by the University to restrict access for a period of time.

Signed:

Date: 10 November 2022

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1 INTRODUCTION

This research project seeks to understand the human-nature relationship in my home country in Germany by investigating human-nature connections and disconnections in urban and rural areas. As the United Nation Secretary Antonio Guterres (2022) stated at the UN Conference on the Human Environment in Stockholm “making peace with nature is the defining task of the 21st century”. By having a better understanding of our relationship with nature, it may help us act in harmony with nature and improve sustainable development, not only in Germany but also in other parts of the world.

1.1 Statement of research issue and justification

Urbanisation is a growing global trend and one of the greatest development challenges of our time. More people are moving away from rural areas to cities due to better employment opportunities, better education and improved health care (UNDESA 2021). The fact that human wellbeing has increased over the last century, while environmental destruction and climate change has deteriorated ecological wellbeing, is often described as the environmental paradox (Raudsepp-Hearne et al. 2010). The crux of this paradox becomes obvious given cities generate 80 percent of global GDP (UNDP 2017) but are responsible for 70 percent of the global energy consumption and carbon emissions (Navarro et al. 2020). Urbanisation is further associated with deforestation, habitat loss, extraction and pollution of freshwater, as well as declining biodiversity and species interactions (Seto et al. 2010).

While more than half of the world’s population currently live in urban areas, this number is even higher for developed economies such as Western Europe, Australia, Japan and the Middle East. Around 79 percent of people in these countries live in cities (UNCTAD 2022). Urbanisation moreover has accelerated during the last few decades: in 1960, the majority of people (2.01 billion) were living in rural areas and only one third of the population inhabited cities (Ritchie & Roser 2022). This major shift from rural to urban landscapes raises the question of how this transition has affected and changed people’s relationship with nature, and whether it matters.

In the face of climate change and environmental degradation the human-nature relationship demands a closer investigation, as human behaviour and attitudes are key

to foster sustainable development (Martin et al. 2016). Therefore, it is important to better understand how and why people behave in harmful ways towards nature, and in what way different living environments contribute to that or could mitigate it. Researchers (Kellert 2012; Zylstra et al. 2014) argue that disconnection from nature in the literature, is one of the many reasons for the ecological crisis, with urbanisation cited as an important factor that contributes to societal disconnection. They further argue (Kellert 2013; Hartig & Kahn 2016, Schuttler et al. 2018), cities separate and alienate people from nature and hence reduce their contact and interaction with the natural world. This “extinction of experience” (Pyle 1993) is thought to reduce people’s emotional connectivity and affiliation with nature (Turner et al. 2004, Pett et al. 2016; Cox et al. 2018; Schuttler et al. 2018). This was considered to be the foundation for developing a sense of caring and commitment to the protection of nature (Kals et al. 1999; Mayer & Frantz 2004; Schuttler et al. 2018). In other words, scholars argue that urban environments create human-nature disconnection to the extent that they do not affiliate with nature anymore, and therefore lose their sense of commitment to protect it. To reverse the “extinction of experience” (Pyle 1993) and counteract the so-called “nature-deficit-disorder” (Louv 2005, 2019), reconnecting people with nature is not only prescribed for environmental change (Pyle 2003; Nisbet et al. 2009; Ives et al. 2018), but it is also recognized as a treatment for social and individual problems. As Pyle (2003 p.206), states:

There is no longer any doubt that a strong individual sense of connection to nature and natural processes is utterly essential to the healthy coexistence of humans with their biological neighbours and physical settings.

A growing body of literature emphasises the benefits of nature for people’s health and wellbeing (Nisbet et al. 2010; Liu et al. 2022). In the United Nation Sustainable Development Goals 2030, universal access to safe, inclusive and accessible, green and public spaces in cities have been identified as a priority (UNSDG 2030), and regular contact with nature considered crucial for people’s mental and physical health, especially in urban areas (Cox et al. 2018; Engemann et al. 2019). Additionally, the World Health Organization (WHO 2017 p.11) recommended that:

...urban residents should be able to access public green spaces of at least 0.5–1 hectare within 300 metres’ linear distance (around 5 minutes’ walk) of their homes.

However, according to the IS Global ranking of cities (IS Global 2022), this is not the reality for the majority of people in European cities: more than 60 percent of urban residents from European countries live in areas with insufficient green space (IS Global 2022). The increasing number of people living in cities raises the question of whether

limited access and or/ interaction with nature affect people's nature connection as well as their health and wellbeing. The COVID-19 pandemic, which further restricted people's engagement with nature to just their residential areas, has reinforced the importance of the availability of nature in cities (Venter et al. 2020, 2021). Studies for example found that during the pandemic pedestrian activity significantly increased in city parks and green belts in Oslo as well as outdoor recreational activities in and around Oslo (Venter 2020). The global pandemic established a new opportunity to explore the implications of the impacts of nature connection and disconnection for people's health and wellbeing as social distancing and lock-down restrictions in both rural and urban regions in Germany took their toll.

Conducted during the COVID-19 pandemic, this project explores how nature connections and disconnections are manifested via a comparative case study between one rural and one urban town in Germany. The key objective of the project was to investigate whether urban residents are more disconnected from nature than rural ones, and whether people's relationship with nature impacts their environmental behaviour and wellbeing and differs between urban and rural contexts. This research also provides a deep qualitative exploration of the human-nature connection, offering opportunities for insights to contrast with previous research, which mainly focusses on the quantitative measurement of nature connection by converting feelings, perceptions, beliefs and behaviour into numbers and scales. Most of these former studies (Hartig et al. 1997; Greenwald et al. 1998; Dunlap et al. 2000; Mayer & Franz 2004; Nisbet et al 2009) used quantitative measures to identify behavioural components, emotional attachments and cognitive belief patterns but they failed to explore the underlying factors that produce them, including where people live. Rather than only quantifying aspects of nature connection, the focus of this research is on understanding the factors and implications of people's relationship with nature in a place-based context.

Germany is an illustrative example of a highly developed country with a strong economy and large population size, with 77.5 percent of its people living in towns or cities (World Bank 2021). Germany has a global reputation as an environmentally friendly economy and was ranked 13th in the Environmental Performance Index in 2022. Germany is also known to be a pioneer in sustainability, recycling and renewable energy, and the German government plans to reduce their greenhouse emissions by 55 percent by 2030 (Berry 2021).

Although there is a global perception that Germany is 'green' and therefore maintains a positive international reputation with regard to sustainability, this fact, however, does not necessarily translate into a guaranteed healthy natural environment, or improved ecological behaviour among the population, nor does it provide any insight into the human-nature relationship on the ground. Germany is Europe's biggest economy and is highly industrialized. It ranks among the world's largest and most technologically advanced producers of iron, steel, machine tools, electronics and automobiles. This raises the question of what role the environment plays in this development, and most importantly, how to manage nature given this focus on industry and technology.

The necessity of exploring nature connections has grown since the effects of climate change and its consequences are increasing across Germany. Gradual ecological destruction and continuous biodiversity loss threatens the livelihoods of many people. The annual average temperature in Germany has already risen by 1.6°C (Umweltbundesamt 2021a), which is not only a higher rate than in other parts of the world but is damaging native ecosystems and starting to affect the economy. In the Climate Impact Risk Assessment 2021 (CIRA 2021), there were 30 factors identified that require very urgent action including deadly heat stress, especially in cities, as well as water shortages all over the country. Droughts will increase and will be particularly destructive for native ecosystems such as forests and wetlands, but they will also impact the agricultural sector in Germany. Indeed, in recent years heat records and very dry summers have profoundly affected the availability of water resources (water shortages), which in turn have an impact on sectors of agriculture, forestry, health, and industry (Umweltbundesamt 2022). The Forest Condition Report of 2020 for example stated that of the trees they surveyed, more trees had died in 2020 than ever before due to long-term damages of forests, caused by extreme heat waves, bark beetle infestation, storms, and fires (Nijhuis 2021). The Federal Department for Environment, however, predicts that extreme weather conditions and heat waves will continuously increase and become the norm in Germany (Umweltbundesamt 2022).

Despite a widespread belief in the reconnection with nature as a prerequisite for sustainable behaviour (Kollmuss & Agyeman 2002; Mayer & Frantz 2004; Schultz 2011; Ives et al. 2018) little progress has been made in achieving and implementing those ideas into conservation practises (Zylstra et al. 2014). Government bodies, business sectors and the general public do not understand the relevance and significance of reconnecting people with nature (Maller et al. 2005; Dirzo et al. 2014). This might be because 'reconnection' is

a diffuse concept, which implies ‘to gain back’ what has been lost. For nature connection to occur, there must be a behavioural change in order to catalyse environmental change.

Set in this context and in order to explore modes of nature connection and disconnection, and their implications for ecological behaviour and wellbeing, this research project aims to explore and compare how the human-nature relationship is understood, and experienced in rural and urban areas in Germany. Research is designed here with a view to better understand the implications of this relationship for pro-environmental behaviour of residents and ecological wellbeing.

1.2 Research questions

Set in Germany the study seeks to answer the following questions:

1. What are and how do the modes of human-nature connection manifest in rural and urban areas?
2. What are and how do the modes of human-nature disconnection manifest in rural and urban areas?
3. Does nature connection and disconnection affect pro-environmental behaviour and ecological wellbeing?
4. What are the implications of the findings for policy and planning?

1.3 Environmental history in Germany

Before presenting the findings, it is important to provide more details about each of the case study areas and set the national and historical context. Germany has a unique environmental history, which helps to explain why ‘being green’ is deeply ingrained in German society (Lekan & Zeller 2005). As Uekoetter (2014) concludes in his book ‘The Greenest Nation? A New History of Environmentalism in Germany’, the perception of Germany as an environmentally conscious country goes beyond a record of achievements and has become part of their national identity. In fact, ‘being green’ is considered a lifestyle in Germany, displayed in vegetarian/vegan food choices, riding bicycles and separating trash (Uekoetter 2014).

Despite the fact that environmentalism is nowadays associated with a left-wing political outlook, nature protection and nature conservation were traditional topics of the conservative and right-wing parties (Treusch 2019). In NAZI Germany, for example,

social nationalist and nature conservationists found common ground in the dislike of liberal capitalism, their attachment to the traditional countryside and 'homeland' (german: "Heimat"), and their advocate for nature conservation and animal protection. As a result of that, a law on the protection of nature was passed in 1935, which is still used as the basic legal framework for nature conservation nowadays (Uekoetter 2006).

This association of nature protection as a conservative topic, however, changed in the 1970's when environmentalism experienced a raise and transformation into a global left-wing movement (Treusch 2019). Growing concerns about the destruction of nature and the pollution of the environment gave rise to a global civic activism, as those years were shaped by environmental destructions, such as the oil spill in Santa Barbara, California, the Torrey Canyon disaster and later the nuclear accident in Chernobyl in 1986 (Dunlap & Mertig 1991). Fuelled by these global demonstrations that started in 1968, Germany developed one of the largest antinuclear movements in the Western world, to protest against the nuclear powers, animal cruelty and environmental pollution (Lekan & Zeller 2005). The peace and environmental activism was particularly strong there as Germany was in the middle of the cold war conflict due to its location and membership in the NATO (Uekoetter 2014). Besides the threat of the cold war, environmental pollution and the destruction of German forests because of acid rain were other important reasons that mobilized people in Germany (Papadakis 2015). Trees and forests play a unique role in Germany's history and are an important part of the German identity and "Heimat", which can be translated as homeland (Breuer 2018). Historians, for example, describe Germanic tribes as forest people. In the battle of the Teutoburg Forest, they used the woodlands as a strategy to defend themselves against the Roman Conquests (Wilson 2016). Trees and forests were hence considered places of protection and safety. Trees and forests also play an essential role in German Literature and poetry. The famous German writer Heinrich Heine for example described German Oak trees as a symbol of resilience, strength and reliability and turned them into a symbol of national identity (Deutsch Centre 2019). The close bond of Germans with their trees is also visible in their forestry practises. During the enlightening period, Germans developed the first forestry management system, which calculated their wood consumption like a mathematic abstraction to grow and harvest trees sustainably (McManus 1999).

Uekoetter (2014 p.9) argues that after Bourdieu's social concept, environmentalism is comprised of three different fields coming together at the same time, (i) civic activism, (ii) a field of government policy, (iii) and a field of culture and life, which took place in

Germany in the 1970's and 80's. As the post-war period was marked by a shift from material values to post-material values, people started to prioritize health and wellbeing, as well as their quality of life (Inglehart 1997; Uekoetter 2014). Civic protests especially among the youth found political support by Germany's Chancellor Willy Brand¹, the first social democratic chancellor after 1930. He established the federal environmental programme that passed laws to regulate environmental pollution in Germany (Kellerman 1971). For this effort to reconcile West Germany and the countries of Eastern European during the cold war, he also earned a Nobel Peace Prize in 1971. As a result of the growing environmental activism, the Green Party was founded in 1980 and was elected in the Bundestag in 1983 (Die Gruenen 2023). Besides that, Non-Governmental Organisations such Greenpeace were established in Germany, which are still powerful and influential nowadays (Eden 2004).

After the Rio summit of 1992, Germany became a leader to fight against climate change. In contrast to other countries, Germany discovered its environmental potential by combining its engineering capacity with governmental power (Uekoetter 2014). Germany developed a new economic market, green engineering, which enabled economic growth and environmental protection at the same time. Over the recent decades Germany has turned into a pioneer in environmental technologies, such as renewable energy from wind and solar, which underpins Germany's political change towards renewable energy (Loehr 2018).

1.4 Description of case study locations

Germany is a densely populated country with 240 people per sq. km. and a population of 83 million. It is a country with a diverse environment and vegetation consisting of lowlands in the North, uplands in the centre and the Bavarian Alps in the South. Its temperate climate coupled with sufficient rainfall provides ideal conditions for growing crops. Therefore, almost half of the land (52 percent) is used for agricultural purposes, 30 percent is covered by trees and forests, 2.4 percent by water areas, 1.6 percent by other mining areas, and 14.5 percent by infrastructure and settlements (Umweltbundesamt 2021b).

¹ Willy Brandt was Germany's Chancellor from 1969 – 1994.

Some 77.5 percent of Germany's population lives within cities and 22.5 percent in rural areas (World Bank 2021). Germany uses a sole criterion for defining urban areas, which is a density threshold. A threshold is defined as 150 inhabitants per sq. km, which is one of the lowest worldwide. The Federal Statistical Office has therefore established four categories to distinguish different settlements sizes. These are (i) a small village/country town with less than 5000 inhabitants, (ii) a larger village/town with 5000 – 20.000 inhabitants, (iii) a smaller city with 20.000 – 100.000 residents, (iv) a major city/metropolis with a population over 100.000 people (BBSR 2022).

As most people in North Rhine-Westphalia live in small-sized cities and bigger villages. Paderborn and Nottuln are selected to portray modes of nature connection and disconnection in 'common' living areas in North Rhine-Westphalia. Findings from this study are thus helpful to gain insights about the human-nature relationship in North Rhine-Westphalia.

Figure 1.1 shows the location of both case study areas in the state of North Rhine-Westphalia.

Figure 1. 1: Location of the Case Study Areas.



1.4.1 North Rhine-Westphalia

North Rhine-Westphalia the state in which both case studies are located has 17.93 million inhabitants and its capital is Duesseldorf. North Rhine-Westphalia is the most populated state in Germany (530 people per sq. km). Despite its large population, most urban settlements in North Rhine-Westphalia are rather small (20-100k) or medium sized cities (100-500k): this reflects Germany's history where geographical regions consist of many small and medium-sized states with their own capital.

North Rhine-Westphalia has a moderate climate with a rainfall of about 1450 millimetres. In the north, forests and green meadows characterise the lowlands of Westphalia and the Lower Rhine region. The South-West has more hilly regions such as the Sauerland, the Bergisches Land, the Siegerland and parts of the Eifel. In the West, North Rhine-

Westphalia shares borders with the Netherlands and Belgium, and due to its historical background as a coal and mining area, the state is more industrialized than other parts of Germany. The state of North Rhine-Westphalia plays a leading role in Germany's national economy. In decades past it was dominated by the mining industry, especially lignite coal, but due to the "Strukturwandel" and the "Energiewende"² in 2011, a political change towards renewable energy, meant that most coal mines have been closed. This structural change towards sustainable energy production has transformed Germany's environmental orientation. This structural change and the accompanying environmental measures have led to a great improvement in air and water quality in North Rhine-Westphalia. The slogan from the environmental movement from the 1960s "blue sky over the Rhur" are now fulfilled and people are able to swim in the rivers "Rhine" and "Rhur" again. Nowadays, the location of North Rhine-Westphalia is the centre of environmental technologies and sustainable energy production, whose innovative companies hold leading positions in the European Union.

The threat to local flora and fauna remains in North Rhine-Westphalia, despite an orientation towards environmental protection and renewable energy, as expanding industrial centres, and growing urban areas leave little space for natural environments. Most natural areas are used for agricultural purposes and forestry, or are covered by strongly developed infrastructure (BMEL 2022). Primal forests and natural forests, that have had no human influence for a few hundreds of years make up less than 0.3% of Germany's land area, as trees are on average not older than 77 years. Compared to the nationwide average of 1400 square metres of forest per person, every resident in North Rhine-Westphalia only has a share of 532 square metres of forest (NABU 2022).

1.4.2 Nature and nature conservation in Germany

A scrutiny of nature and conservation classifications in Germany provides a better understanding about how nature is distributed, used and managed in both case study locations. As the environment shapes the way people can experience and engage with nature, this section provides context for how urban and rural residents relate to nature in the case study areas.

The use and management of the natural environment in Germany are based on its classification and categorization for nature protection and conservation. Table 1.1

² The energy transformation, in Germany widely known as the "Energiewende", is the country's planned transition to a low-carbon, nuclear-free economy" (CEW 2022).

displays the different degrees of nature conservation used to determine the standard of nature protection and land use in Germany.

Currently, there are 16 national parks, 18 biosphere reserves, and 103 nature parks, as well as 8743 nature conservation areas in Germany. As demonstrated in Table 1.1, 1.050.442 ha of Germany's territory is designated as national parks, which may seem spacious. Most of this space, however, is a marine area of the North and Baltic Sea. The terrestrial area consists of 208.238 ha, which only accounts for 0.6 percent of Germany's landmass. In national parks, the commercial exploitation of natural resources, including farming, forestry, water use, hunting or fishing, are mainly prevented or only allowed with strict requirements laid down by the nature conservation authorities (see Table 1.1 for more details). As the Federal Agency for Nature Conservation (BFN 2022 p.13) states, those areas aim to "ensure the undisturbed progression, as far as possible, of natural processes in their natural dynamics".

Table 1. 1: Explanation of the different degrees of nature conservation in Germany.

Type	Explanation	Terrestrial area in Germany
National Park	National parks are large, largely not fragmented with special characteristics. They fulfil the requirements for a nature conservation area in the greater part of their territory, and in the greater part of their territory, have not been affected by human intervention at all, or to a limited extent only, or are suitable for developing, or being developed, into a state which ensures the undisturbed progression, as far as possible, of natural processes in their natural dynamics. Commercial exploitation of natural resources, by farming, forestry, water use, hunting or fishing, largely prevented or only allowed subject to strict requirements laid down by the nature conservation authorities.	Germany currently has 16 national parks covering a total of 1,050,442 ha. Excluding marine areas, national parks cover around 0.6 percent of German territory.
Nature Conservation Areas	Nature conservation areas are among the most strictly protected areas. Their destruction or modification prohibited, which guarantees special protection of habitats and the wild flora and fauna in them. Their use only permitted if it does not conflict with the protection goal. Most nature conservation areas are designated by authorities in charge of nature conservation at regional government level.	Germany has 8,833 Nature Conservation areas, that make up 3.9 percentage of the terrestrial area.
Biosphere Reserve	Biosphere Reserves are model regions for the coexistence of humans and nature. They protect natural and cultural landscapes shaped by humans and the diversity of species and biotopes that have grown with them. They help to develop a balanced relationship between natural and social processes and sustainable management. To implement the various goals and functions, biosphere reserves are divided into three zones. The zones can consist of several sub-areas that have to be ecologically functional in themselves.	The terrestrial area of the 18 biosphere reserves is 3.9 percent of Germany. UNESCO has recognised 16 of all 18 German biosphere reserves.
Nature Park	Nature parks are large protected areas, which are particularly suitable for recreational activities. The main goal of nature parks is to match the recreational activities in the park with the protection of nature.	Germany has 103 nature parks. With a total area of 10.1 million ha, nature parks cover 28.4 percent of Germany's land surface.
IUCN Category 1b (wilderness area)	Wilderness Protected areas that are usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.	—————

Source: Information based on Federal Agency for Natural Conservation (BFN 2022) and Dudley et al. (2010).

In North Rhine-Westphalia, where both case studies are located, there is only one National Park, the Eifel, founded in 2004 and classified as a “national park in development”. The Eifel mainly consists of woodlands and is located more than 200 km from both case study locations Paderborn and Nottuln.

As displayed in Table 1.1 on page 9, nature conservation areas are another conservation classification that also prioritizes nature conservation over land use. Generally, in these areas destruction or modifications have been prohibited and depend on the conservation objectives of those designated areas. Although there are 8833 Nature Conservation Areas in Germany, most nature reserves are smaller than 50 ha (60 percent) and only 15 percent are larger than 200 ha. Size and location, however, matter as they affect the efficiency to protect the areas from outside influences. As the Federal Agency for Nature Conservation admits (BFN 2022), smaller conservation areas, often not sufficiently protected for negative external factors such as drainage and eutrophication. However, most areas are still affected by land use such as forestry and farming, use of water resources, and for transportation and recreation, as conservation objectives often only depict certain aspects of that area, such as the protection of specific trees.

North Rhine-Westphalia has around 3000 Nature Conservation Areas. These places are popular recreational destinations for residents as they are accessible for most people. The conservation area “Baumberge”, shown in Plate 1.1, is the largest and most popular nature conservation area and is located 7 km from the rural case study Nottuln. The Baumberge is a relatively big conservation area consisting of 397 ha with the only chain of hills in the Muensterland area (188.7m above sea-level).

In 2007, parts of the Baumberge were recognized as a nature conservation area for its largest continuous beach forest in the Muensterland area (Naturschutzzentrum 2022). This means that wood cutting is only allowed in certain areas of the Baumberge and even then, only under special circumstances. Over the last 50 years, the declaration of Nature Conservation areas has significantly increased in Germany. Numbers have risen from 1171 parks in 1968 (0.47 percent of Germany’s land) to 8844 parks in 2020 (3.9 percent of Germany’s territory). This trend is in alignment with rising environmental awareness in Europe and the accompanying rules and regulations regarding nature conservation and environmental protection.

Plate 1. 1: Nature Conservation Area Baumberge.



Source: © rural respondent 10

Near Paderborn, the most popular nature conservation area is the “Haxter Grund”, which protects a large forest area in East Westphalia, which is shown in Plate 1.2.

Plate 1. 2: Nature Conservation Area Haxter Grund near Paderborn.



Source: © Lina Loos

The “Pamelsche Grund” and “Gottgrund” are other smaller conservation areas in the region with beech forests and rare buttercup plants as well as a few areas in proximity to the Lipperiver and the Padersprings.

In contrast to the 8743 smaller Nature Conservation Areas, there are only 18 biosphere reserves in Germany, which are larger and contain a core zone, where nature should develop as untouched as possible by humans. This core zone has at least 3 percent of its area often declared as a national park. As with nature conservation areas, biosphere reserves make up 3.9 percent of Germany’s territory but there are currently none in North Rhine-Westphalia.

The largest proportion of protected areas in Germany consists of Nature Parks. With a total area of 10.1 million ha, nature parks cover 28.4 percent of Germany’s land surface. As described in Table 1.1 nature parks are natural areas that focus on sustainable recreation, tourism, and sustainable land use. The nature parks closest to Nottuln are the Natur Wildlife Park in Duermen (~25km), and the Venner Moor (~20km). In the Wildlife Park in Duermen, people have the opportunity to observe native animals such as fallow deer, sheep and in a separate section – wild horses, common for this region (Plate 1.3). The Venner Moor, (Plate 1.3) is another popular tourist destination for people where they can see unique habitats for marsh plants, birch trees, and birds, such as teals, little grebes and tree pipits.

Plate 1. 3: Nature Park Venner Moor near Nottuln and Wildlife Park Duelsen.



Source: © Kerstin Wittjen

The closest and most popular Nature Park in the Paderborn area is the 2700 square kilometre Teutoburg Forest/Eggegebirge Park with continuous forest and hills (Plate 1.4). It is located 30 km out of Paderborn and is home to biotopes and protected landscapes as well as to natural monuments such as rock formations and historic memorials.

Plate 1. 4: Parts of the Nature Park Teutoburg Forest near Paderborn.



Source: © urban respondent 4

It is important to note, there are currently no wilderness areas in Germany that would classify under IUCN category 1b. As shown in table 1.1 on page 9, the IUCN category 1b describes a wilderness protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence without permanent or significant human habitation to preserve their natural condition. Even National Parks do not uphold

these internationally agreed standards. The Federal Agency for Nature Conservation (BFN 2022) explains that transport and farming make it hard in a country as densely populated as Germany to comply with global standards and attain the designated objectives.

Considering the different degrees of nature-conservation, their size and locations, this overview shows that nature in Germany is mainly for (sustainable) land use and/or tourism and recreation. Despite the continue of conservation standards, data show that Germany has only a few places such as National Parks, where natural processes and dynamics develop and progress mainly undisturbed and unaffected by human intervention. Areas that would be categorized by IUCN standards as largely unmodified wilderness areas do not exist in Germany.

Further, most of the larger protected areas are not in North Rhine-Westphalia, thus the experience of pristine ecosystems and “untouched” natural areas may not be a common experience for residents from the rural or urban case study areas. It was found that residents from both case study areas were exposed to similar forms of nature. Both respondent groups were surrounded by farmlands, forestry and cultural landscapes and had access to Nature Conservation Areas and Nature Parks close by. Being surrounded by nature that is mainly shaped by humans may indicate that people build their relationship with nature upon a more cultivated and domesticated form of nature. Most conservation areas are relatively newly established and are still in the process of regeneration after former land use and (unsustainable) human interventions. Residents may not always be aware of the new conservation standards with areas used for other purposes before.

1.4.3 Urban area: Paderborn

Paderborn is a city with 155,448 inhabitants (2022) in the East of North Rhine-Westphalia. It is the capital of the Paderborn district and located on the western slope of the Teutoburg Forest, which marks the beginning of the Eggegebirge. The Paderborn district consists of an area of 17 950 sq. km, with 20.8 percent of area occupied by building space and settlements, another 9.8 percent for traffic, and 4.4 percent provided for recreational space or burial grounds. Agricultural purposes make up 44.5 percent with 16.4 percent for forestry, and 2.6 percent water area with 0.6 percent covered by moor and heathland (KPB 2022).

The capital of Paderborn district, Paderborn city, founded as bishopric by Charlemagne in 795, who built a castle and later a cathedral near the “Pader” springs. The Pader is a small affluent of the Lippe river that later leads into the Rhine. Nowadays, the “Paderquellgebiet” the source region, has become a park and recreational area, which is located in the heart of the city centre. The catholic influence of the church is still present in Paderborn with several theological and private academic institutes based there. During World War II, 85 percent of the city was destroyed including many historical buildings with some of them rebuilt such as the town hall and the cathedral, which are now cultural symbols that form the characteristic cityscape (Plate 1.5).

Plate 1. 5: City of Paderborn: The town hall and cathedral.



Source: © Lina Loos

After the reconstruction of the city in the 1940s and 1950s, Paderborn became a major industrial seat in the region. It is now the headquarters of the Siemens-Nixdorf Computer AG as well as other information technology companies and industrial enterprises, such as furniture manufacturing, motor-vehicle parts, machinery, and metal production. Lichtenau-Asseln, a part of the Paderborn district, is now one of the biggest inland windfarms with 78 wind turbines (Plate 1.6), a showcase that demonstrates their contribution to climate protection.

Plate 1. 6: Wind farm in Lichtenau-Asseln in the Paderborn district.



Source: © Lina Loos

In 2020, 50.2 percent of the population in Paderborn was female and 49.8 percent male, with 10 percent students at the local university. In total, 11.2 percent of the population is non-German. Around 60 percent of the people living in Paderborn are Catholics, 20 percent Lutherans and 20 percent members of other faiths or not religious.

Few of the 73 772 employed people in the Paderborn district work in agriculture, forestry and fishing, while 23 percent work in production industries, 20 percent in trade, hospitality, traffic services, and 57 percent work in the other service sectors. Most are employed in full time work (70 percent), with 30 percent in part time employments. In 2016, the average available income of persons was 20,215 Euro per year, which was slightly beneath the average from other cities of comparable size in North Rhine-Westphalia. The current unemployment rate is 4.7 percent (KPB 2022).

1.4.4 Rural area: Nottuln

The municipality of Nottuln consists of four villages, which are Nottuln (11 979 inhabitants), Appelhuelsen (4732 inhabitants), Schapdetten (1286 inhabitants), and Darup (2195 inhabitants). The municipality is located in the Northwest of North - Westphalia in the so-called Muensterland/Muensterarea, which is characterised by its typically flat landscapes. Through the highway A43, Nottuln is connected to the next major city Muenster (around 20km), with a population of 314 000 inhabitants.

In 860, the village Nottuln was founded as an abbey for women. The name Nottuln assumed to come from the early German word for “nut wood”, “Nutlon”, which indicates that nut trees dominated Nottuln’s original landscape. Nottuln’s coat of arms still demonstrates this connection by its three green hazelnuts (Figure 1.2).

Figure 1. 2: Nottuln's coat of arms.



Source: GN 2022.

In 1980 many people moved to Nottuln when surrounding farmland was sold and transformed into a residential area. The village of Nottuln now has two primary schools and two secondary schools. The average age for males in Nottuln was 46.4 years old, and for females 43.9 years old. Moreover, 67.3 percent of Nottuln's inhabitants are Catholics, 17.1 percent protestant, and 15.6 percent had no stated religion or another religion. Trade and industries in Nottuln were made up of environmental technologies, pipe joint seals, wastewater facilities, clinker and concrete production, as well as transportation services (GN 2022). Some 81 percent of the population worked as employees, 7.0 percent as civil servants, 12 percent self-employed.

1.5 Structure of the thesis

The overall structure of the thesis takes the form of eight chapters including this introductory chapter, which also provided background information on the case study areas, as well as the official guidelines for different nature conservation standards in Germany. Chapter Two reviews the theoretical literature relevant to the topic of the study. The first section explains how nature is defined and conceptualized. Further, different components of the human-nature relationship are examined to better understand modes of nature connection. The importance of nature connection for people's health and wellbeing outlined as well as the influence of nature connection for pro-environmental behaviour. The third section scrutinises the topic of disconnection from nature by discussing how urban living and modern lifestyles contribute to a growing human-nature separation. Lastly, ways forward and approaches to reconnect people with nature are presented.

Chapter Three presents the methodology adopted for this thesis. Using a comparative case study design, and the adoption of a qualitative approach, the nature connection and disconnection in a rural and an urban case study in Germany was scrutinized.

Findings of this research are presented in three thematic chapters. Chapter Four looks at modes of nature connection in the rural and urban case study location within Germany.

Chapter Five presents findings on the topic of nature disconnection. First, the examination of rural and urban residential perceptions of nature disconnection, followed by a presentation of the perceptions of practitioners from both case study areas.

Chapter Six examines the implications of nature connection and disconnection for people's wellbeing in both case study areas and during the COVID-19 pandemic. It further presents the results from the analysis relating to pro-environmental behaviour and ecological wellbeing and presents the significance of transformative nature-experiences for nature connection.

Chapter Seven discusses key findings and argues that cities are not places in which the human-nature relationship atrophies, as people in urban areas are as emotionally connected with nature as those in rural areas. Modes of nature connection and disconnection in Germany also illustrated that in order to achieve better nature conservation and increased biodiversity, we cannot only rely on individuals' nature connection and commitment to motivate pro-environmental behaviour, but must also incorporate policy changes that prioritise nature and nature conservation on a broader societal and political scale.

Chapter Eight concludes by discussing the project's findings in light of the research questions and provides recommendations and suggestions for further research.

2 LITERATURE REVIEW

2.1 Introduction

This chapter presents a literature review of the scholarship around human-nature connection. As this thesis is written from a Western perspective and explores the human-nature relationship in Germany, mainly western concepts of nature and nature connections are presented. To structure and approach the multifaceted area of the human-nature relationship, the first section of the literature review explains how nature is defined and conceptualized. Understanding the ontological framework of this topic is fundamental to understand the multi-faceted ways in which ‘nature’ is valued, treated and managed within dominant belief systems.

The second part of the literature review explores scholarship that explores the human-nature relationship and presents different modes of nature connection. Subsequently, the importance of nature connection for people’s health and wellbeing is examined as well as the influence of nature connection for pro-environmental behaviour. The third section scrutinises the topic of disconnection from nature, and presents literature that discusses how urban areas and modern lifestyles contribute to a growing human-nature separation. Lastly, the review presents scholarship that suggests ways forward and articulates approaches that will reconnect people with nature, as a way to counteract growing alienation and separation from nature.

2.2 Defining and conceptualizing nature

When it comes to the natural world, human meanings and interpretation of ‘nature’ vary greatly, and this variation is contingent on factors such as interactions, values, belief systems and knowledge (Pilgrim & Pretty 2010). It is important to identify and understand different assumptions, beliefs and worldviews of nature as they establish the source of our values that guide human behaviour (Skolimoski 1981). In other words, diverse constructions of nature and ontological frames, will affect values and actions (Schuttler et al. 2018), which means the way people perceive and value nature establishes will align with how they act and behave.

Even though the study of ‘nature’ underpins many sciences and philosophies, theoretical concepts and mental constructions of ‘nature’ are controversial across the disciplines (Ducarme & Couvet 2020). The following sections therefore present the different definitions and concepts of nature and the consequences those different perspectives entail for the usage and conservation of nature. Western perceptions and concepts of nature relevant to explore the human-nature relationship in those areas were chosen.

Commonly, the term nature is used to describe the natural environment, consisting of plants and animals that exist independently from humans. The range of definitions varies widely as shown in Table 2.1. The Cambridge Dictionary for example defines nature as all animals, plants, features, forces and processes in the world that exist or happen independently of people. In a similar way, The Federal Education Centre for Environment and Nature protection in Germany (BHU 2019) defines nature as things that humans did not create, including living plants and animals. They classify nature as a part of the environment, understood as everything that surrounds human beings. In the Western world, nature is mainly understood as a category of things, as a space separated from humans, or an inner essence (Milton 2003). However, to approach and conceptualize nature scientifically, it must be defined as an external entity separated from humans. For this purpose, Wohlwill (1983 p.7) defined nature as “a vast domain of organic and inorganic matter that is not a product of human activity or intervention”.

Over the years, scholars have focussed on different aspects of nature used as guidelines to determine what needs conservation. The conceptual differences between definitions of nature vary widely. When the Yellowstone National Park in the United States was established in 1872, nature as ‘wilderness’ became a popular concept for nature-conservation, and was then understood as protecting an ‘untouched’ space away from civilization and human intervention. Later, this understanding was criticised for establishing humans and nature as separated concepts that exist independently from each other (Keune et al. 2022). Moreover, the idea of wilderness is further problematic as it often does not acknowledge Indigenous management strategies that shaped National Parks before they were established, or the way in which Indigenous understanding of nature was a holistic interconnection between humans and nature: not separated at all. As Canon (1996 p.70) hence critiques, the concept of wilderness as he believes it is a false illusion of naturalness and ultimately a construction of our own longing and desires.

Wilderness hides its unnaturalness behind a mask that is all the more beguiling because it seems so natural...For this reason, we mistake ourselves when we suppose that wilderness can be the solution to our culture's problematic relationships with the non-human world, for wilderness itself is no small part of the problem (Canon 1996 p.70).

In Blanc's recent book "The Invention of Green Colonialism", he critiques how colonial powers imposed the concept of wilderness on African countries by removing Indigenous people from their land under the premise to protect nature and establish national parks.

As Nature as wilderness was identified as a problematic concept, nature as biodiversity became a popular definition used as a reference point to determine how healthy nature is in most sciences and conservation practices (Mace et al. 2018; Dinerstein et al. 2019). The focus on biodiversity shows how the estimation of ecological health has evolved to be a function of species viability and other ecological functions, and embedded as another dominant way of framing nature and conservation.

Table 2. 1: Definitions of Nature.

Author	Definition of nature
Cambridge Dictionary (Cambridge Dictionary 2022)	Nature is all animals and plants in world and all features, forces, and processes that exist happen independently of people, such as the weather, the sea, mountains, reproduction, and growth.
Federal Educational Centre for Environment and Nature Protection (BHU 2019)	Nature is understood as all things on earth that humans did not create, such as the ocean, air and mountains. These also include living things such as plants and animals. The environment on the other hand is everything that is around us – a rabbit, a smell, a glass of water, a village and other people. Nature is part of the environment.
Joachim Wohlwill (1983 p.7)	Nature is a vast domain of organic and inorganic matter that is not a product of human activity or intervention.
Milton (2003)	In the modern industrialized world, nature is either: 1. Defined as a category of “things”. 2. Understood as a space separated from humans (e.g. wilderness). 3. Nature seen as an inner essence.
Zylstra (2014 p.121)	Term ‘nature’ refers to any element of the biophysical system, which includes flora and fauna, and geological landforms occurring across a range of scales and degrees of human presence. ‘Nature’ conceived as the biophysical environment as it exists without human beings.
Nature as wilderness Wilderness act 1964 (US Department of Justice 2015)	Wilderness is an area where the earth and its community of life are untrammelled by man, man himself is a visitor who does not remain.
Nature as Biodiversity Convention on Biological Diversity, CBD 1992: Article 2. (CBD 2016)	Biodiversity is variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.
Nature as Ecosystem Services (Costanza et al. 2017 p.336)	Ecosystem services defined as direct or indirect contribution to sustainable human well-being.
Nature as Biocultural Diversity (Maffi 2005 p.269)	1. The diversity of life made up not only of the diversity of plants and animal species, habitats, and ecosystems found on the planet, but also of the diversity of human cultures and languages. 2. These diversities do not exist in separate or parallel realms, but rather they interact with and affect one another in complex ways. 3. The links among these diversities have developed over time through mutual adaptation between humans and the environment at the local level, possibly of a co-evolutionary nature.

Table 2.1 also highlights that to acknowledge the interrelation and interdependence between culture and nature, the term *biocultural diversity* has become a progressive way of conceptualizing nature especially in the Social Sciences (Eland et al. 2019). Biocultural diversity asserts there is a mutual relationship between nature and culture and emphasises its interdependence as both co-evolve. This concept acknowledges the close interrelation between the diversity of cultures and languages, with the diversity of ecosystems and habitats both contributing to the diversity of life (Maffi 2005).

To demonstrate the dependency of humans on nature, the idea of ecosystem services was invented to demonstrate the value of nature by calculating nature's contribution to human wellbeing. Therefore, The Millennium Ecosystem Assessment (MA 2001-2005) was established to measure nature's ecosystem services that provide and enable life on this planet. The four major categories of ecosystem services are:

- (i) nature's provisioning services as the resource of food, water, natural gas, oil etc.
- (ii) nature's regulating services, which make life possible for human beings, for instance through plants cleaning the air and filtering the water, bees pollinating flowers etc.
- (iii) nature's cultural services that guides the cultural, intellectual and social development of human beings.
- (iv) nature's supporting services in forms of underlying natural services such as photosynthesis, the creation of soil or the water cycle etc (NWF 2022). Although the calculation of ecosystem services highlights the dependence of humans on well-functioning ecosystems, this economic outlook that constructs nature as a service provider is often criticised for disregarding nature's intrinsic value. However, it is commonly used to demonstrate nature's monetary value (Keune et al. 2022).

2.2.2 The human-nature dichotomy

After presenting different conceptualizations and definitions of nature, the following section focusses on human-nature connection. As Schultz (2002) argues, to understand people's connection to nature, it is important to look at their perception of nature and their integration with it. Cultural systems thereby lay the foundation for people's belief system relating to how to interpret themselves and the world around them (Bertolas 1998; Ingold 2002; Gifford 2007).

In Western cultures, the predominant perception of nature connection is based on an anthropocentric and materialist outlook, which is referred to as the modern constitution of nature (Lambert et al. 2006; Anderson 2009; Latour 2012). Dickinson (2013 p.14)

argues, the “anthropocentric human construction [of ‘nature’], [is] driven by and entrenched in a human-nature binary” and expressed in a dualistic construction of the world. It is an understanding that perceives human culture as the opposite to nature and as an evolutionary development into a higher state (Lamb 1996; Tam 2014; Stokols 2018).

This division of culture and nature that characterised human-nature conceptions emerged out of the industrialized need to control and manage the natural world (Berkes 2017). It is rooted in the rational thinking of the enlightenment period where god is seen as the inventor of the machinery of nature (Latour 2004). This separation into subjective and objective thinking enables people to understand the connection between their thinking, doing and being and creates a preference and domination of one over the other (Zylstra et al. 2014). This separation, Attfield (1991) believes, also serves to detach people from the complexity of reality. The aim is to order the “chaos” and “complexity” of reality by classifying the world into durable and static “noun chunks” that form approachable conceptual categories (Laurier & Philo 1999). According to Barnes (2005), those “filing cabinets” (e.g. nature or culture, economy or society) are used to cluster the complex reality into understandable and manageable areas of control. This classification and separation of the world incorporates epistemological consequences that determine how people generate and produce knowledge, and how reality is perceived (Barnes 2005).

In most Western sciences, for example, the study of nature and natural processes are through a detached perspective without being part of the process, and so objectively studied from the outside with the help of logic (Barlow et al. 2019). This way of studying the world does not acknowledge inner ways of knowing and subjective constructions of reality (Norgard 1994). Within a Western belief system, the universe is perceived as non-living and “as a machinery to be dissected, interpreted and manipulated” (Evernden 1993 p.20). This dualistic and hierarchical worldview is also rooted in the creation story of the bible emphasising the “dominion” over animals and land (Johnston 2005), and serves as a religious foundation on which the Western value and belief system is built upon (Merchant 1996).

This distinction between human beings and the non-human world, both as static and independent, has been often referred to as the “human-nature dichotomy” (Lamb 1996; Anderson 2009; Barlow et al. 2019). Such an anthropocentric perception of nature does not understand humans and nature as an integrated and interconnected system (Caillon et al. 2017), and establishes a hierarchical order that values, uses and manages nature as a resource that is measured by its benefits or potential harm for human beings (Schroeter

et al. 2014; Silvertown 2015). In this way, ecosystems have been approached through scientific measurements to calculate ecological footprints (Wackernagel et al. 1999; Galli et al. 2014, Destek & Sarkodie 2019) or to estimate possible ecosystem services (Daily 1997; Bateman et al. 2013; Costanza et al. 2014; Vaughn et al. 2018). Moreover, this worldview enacted by behaviour that either protects nature (Sessions & Devall 1985; Gottlieb 2003; Novicova et al. 2019), domesticates nature (Ellen & Fukui 1996), or exploits nature (McPhee 2011).

Scholars (Whatmore 1999; Latour 2004, 2012; Anderson 2009) argue that nature's agency is often not recognized by positioning the environment as a passive recipient of human interference. This dichotomous conceptualization of nature is hence considered as a barrier for ecological wellbeing and constructed as a reason for environmental destruction and exploitive ecological behaviour (Plumwood 2001; Tam 2014, Schuttler et al. 2018; Barlow et al. 2019). Although a dichotomous approach towards humans and nature is often adopted in the natural sciences, van de Born (2008) suggests that in fact the majority of people in European countries do recognize the intrinsic value of nature, although it does not come naturally to them.

2.2.3 A biocentric or integrated perception of nature

Rather than perceiving human and nature as separated beings, a more integrated and biocentric approach is now being articulated within the Social Sciences (Anderson 2009, 2012; Caillon et al. 2017). Emerging from poststructuralist and feminist perspectives, scholarship has started to bridge the gap between nature and culture and beyond the divisiveness of the modern constitution of nature (Braun 2004; Lambert et al. 2006; Latour 2012). A biocentric or integrated perception of nature, understands all life to be equally important and intertwined without hierarchical judgement (Rottmann 2014). This conceptualization recognizes nature's intrinsic value, "that nature has a value on its own, irrespective of its usefulness to humans" (van den Born 2008 p.90).

Instead of differentiating between humans and nature, Hartig (1993) emphasises it can become an integrated and fluent understanding between the two, and argues that humans and the environment act to define each other constantly through their interactions. Recognizing the role of nature in social relations also recognizes its inherent capacity for adaptation, and as a space where humans and on humans can co-engage (Steinberg 2001 p.4). Based on this outlook, DeLanda's concept and ontogenetic theory of an "assemblage" is useful as it describes the coming together of human and nature as a co-constitution

(DeLanda 2016, 2019). This ontological framework emphasises the exchangeability and flexibility of components of two entities, in this case humans and nature (Nail et al 2017; DeLanda 2019). In this context, the idea of biocultural diversity, as discussed earlier, emphasises the interrelationship and interdependencies between people and nature and its dynamic co-evolution (Buizer et al. 2016; Vierikko et al. 2020). Based on these assumptions, urban nature and urban green space are considered a “cultural landscape embodying a specific type of co-volution between nature and culture” (Eland et al. 2019 p.30).

2.2.3.1 Indigenous cosmology

Such a relational approach towards nature and the universe is also rooted in many Indigenous³ knowledge traditions (Milton 1998, 1999; Gonzales & Gonzales 2010). Many Indigenous people base their cosmology on a more holistic and integrated understanding of nature that the tools of science cannot explain (Berkes 2001, 2017). Indigenous world-views perceive and understand the earth as a living being, one of which they are a part. Not only animals and plants are relations and have souls, but also other natural objects such as glaciers, mountains or rivers (Cruikshank 2012). The conceptualization of nature in most Indigenous cultures has been embedded into a moral and ethical framework (Berkes et al. 2000). As Reichel-Dolmatoff (1976 p.311) notes, the rules the individual must follow “refer, above all, to a cooperative behaviour aimed at the conservation of ecological balances as the ultimate desirable quality”. Acknowledging an interconnectedness among all beings evokes a responsibility of caring and looking after nature: its destruction is harm to oneself. This ‘sacred ecology’ has been understood as an expansive concept rather than a scientifically restricted one (Folke et al. 2016). The ambition to implement such integrated understanding often drives conservation policy and practices, and is a possible solution for the environmental crisis (Caillon et al. 2017; Douzal 2019). The IPBES⁴, an independent intergovernmental body comprising over 130-member Governments provides policymakers with objective scientific assessments about nature’s health, and has suggested such sacred ecologies are useful for biodiversity conservation and ecosystems services. They cultivate respectful and responsible

³ As I am investigating human-nature connections from a Western perspective and within a Western context, this research acknowledges Indigenous knowledges systems but will not focus on them.

⁴ Established by Governments in 2012, IPBES provides policymakers with objective scientific assessments about the state of knowledge regarding the planet’s biodiversity, ecosystems and the contributions they make to people, as well as options and actions to protect and sustainably use these vital natural assets.

relationships towards the environment in ways that minimize hierarchical domination and one-sided exploitation (Matulis & Moyer 2016, Chan et al. 2016, Pascual et al. 2017).

2.2.3.2 Relational approach and One-ness with nature

In the field of environmental psychology, geography and conservation studies, the biocentric perception and integrated definition of nature has received increasing attention and recognition. Anderson (2009 p.120) for example, argues that ‘post nature’ “should be understood as a transient convergence in a context of flow, union, and divergence”. Drawing on Bachelard’s (1969) understanding of “lived space”, places are found to contribute to the human experience as much as the person itself (Game & Metcalfe 2011). In this context, places have a relational agency and produce “relational sensibilities” (Anderson 2012 p.574). A relational approach to human nature connections emphasizes continuously unfolding processes and relations (West et al. 2020). Within this perspective, humans are nature and vice versa, and define themselves through embodied experiences in holistic situations (Cooke et al. 2016; Raymond et al. 2017).

Within this perception, human and nature are understood as one, as an interconnected entity where no separation exists. This inclusive view of oneness overcomes the human-nature dichotomy as people “view themselves as part of the same continuous system as the land to which they belong” (Pilgrim & Pretty 2010 p.4). This union is perceived to be greater than its consisting parts and is called “convergence” (Anderson 2009; 2013). In contrast to the assemblage, a convergence evokes an affective atmosphere and not only emotive reactions (Steinberg 2001).

By exploring how people experience and connect to Bondi Beach for example, changes in perspectives were described as ontological shifts that “got things back into perspective” and triggered people to “let go” of narrow identifications while “being-open” to the present moment (Game and Metcalfe 2011 p.46). This perception of human-nature connection does not only combine and co-constitute two entities as an assemblage but recognizes them as a union. Terms like “interpenetration” and “eco-eroticism” (Shaw 2007; Shaw & Francis 2014), “the oceanic feeling” (Capp 2012; Saarinen 2017), being at “stoke” (Tylor 2007), “nothingless” (Game & Metcalfe 2011) and being in “awe”⁵ (David & Gaterleben 2013) are all used to describe this transcendent feeling and state of mind. Daily habits

⁵ Awe is defined as “an emotional response to perceptually vast stimuli that overwhelm current mental structures, yet facilitate attempts at accommodation” (Shiota et al. 2007p. 944).

and routines like swimming (Foley 2015), beach running (Game & Metcalfe 2011), surfing (Anderson 2013) or contemplative practises like meditation, yoga or art (Osis et al. 1973, Saarinen 2015) seem to encourage an “openness to experience”, and the connection and perception of merging into oneness (Tam 2013, Silvia et al. 2015). Those feelings of “transformation” and “communion” evoke a sensation of nature connection (Tam 2013) and are considered spiritual encounters with nature (Taylor 2010,).

Scholars argue that in perceiving themselves as one with nature, people’s perception of themselves changes and encourages a more meaningful and responsible involvement in this world. Pritchard et al. (2019 p.1161) for example note:

Transcendent experiences, could be a key mediating influence in the relationship between NC and personal growth... The sense of awe felt in nature could lead to an expansion in individuals’ mental structures and frames of reference, as well as an expanded sense of self, and so foster personal growth.

Research in the field of conservation studies therefore emphasises the importance of being in awe with nature asserting it as a powerful way to shift people’s mindset towards a more integrated and holistic understanding of nature. This connection is one that can promote opportunities for meaningful engagement in the world (Saarinen 2017).

2.3 The human-nature relationship

This section builds on the previous section, which explored aspects of the dichotomous nature of the human-nature relations to explore the different ways in which the human-nature relationship is manifest. The next section explores the importance of nature connections for people’s health and wellbeing, as well as the influence of nature connection for pro-environmental behaviour.

2.3.1 Defining nature connections

Various scholars (Schultz 2011; Zylstra et al. 2014) have tried to identify the foundational components that constitute people’s relationship to nature. Most of them agree that it is based on three core components which are people’s *affect* (feelings and emotions towards nature), their *cognition* (perception, knowledge, values and beliefs about nature and relation to self) and people’s *behaviour* in and with nature (actions and experiences).

Connectivity with nature, however, is a term vaguely defined and inconsistently applied throughout the disciplines. The following terms are used by a range of scholars: “nature

relatedness” (Nisbet et al. 2009); “connectivity with nature” (Dutcher et al. 2007); “connectedness with nature” (Zylstra et al. 2014); or “connectedness to nature” (Mayer & Frantz 2004); are commonly used to describe a *state of mind* (Kals et al. 1999; Schultz 2002; Nisbet et al. 2009; Zylstra et al. 2018); an *experience* (Fingers 1994; Anderson 2012; Soga and Gaston 2016; 2020), or a *relationship to a place* (Stedman 2003; Tonge et al. 2015).

The connection to nature starts as an attachment to a place or environment is often stated (Gayton 1996; Stedman 2003; Larson et al. 2011; Tonge et al. 2015) and may increase through personal or commonly shared experience in nature (Fingers 1994; Shaw & Francis 2012; Soga & Gaston 2016). Kellert (2012) claims that place attachment evokes a sense of belonging, which is the foundation from which nature connections develop and unfold. Researchers (Lewicka 2011; Knez 2012; Patwardhan et al. 2019) have found that emotional attachment might be the result of social, psychological, historical and spiritual connections people establish with places.

The influential ecologist Leopold (1970) coined the term “ethical relationship to land” to describe the core components that constitute people’s connection and attachment to nature.

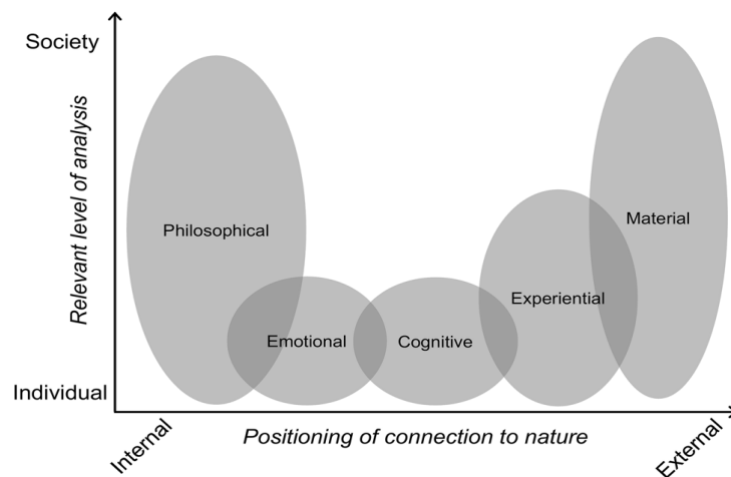
We can be ethical only in relation to something we can see, feel, understand, love, or otherwise have faith in... It is inconceivable to me that an ethical relation to land can exist without love, respect, and admiration for land and high regard for its value (Leopold 1970 p.230).

As Leopold highlights, people’s relationship with nature is largely based on their emotions towards nature, but also incorporates their cognitive understanding and beliefs about it. He highlights the importance of values people hold towards the land but also mentions there is an experiential dimension whereby people sensually engage with and experience nature. He recognises there is a moral or even spiritual dimension of the human-nature relationship by referring to people’s faith and their belief in a higher purpose in nature. Taking those aspects into consideration it becomes clear that connections with nature have been based on internal as well as external factors that shape the way people behave and act in relation to nature.

Ives et al. (2018) also identified five major categories that describe types and forms of human-nature connections. Figure 2.1 demonstrates the internal and external human-nature connections and their relevance for society/individuals. The categories portray and summarise modes of connection people have, maintain and accomplish with nature. Ives

et al. (2018) identified the following categories from prior studies: (1) a *material* form of human-nature connection that draws attention to the consumption of goods/material from nature (Haberl et al. 2004); (2) an *experiential* dimension that describes direct interactions and experiences with nature (Soga & Gaston 2020); (3) a *cognitive* human-nature connection, incorporating environmental knowledge and awareness, just as people’s values and attitudes towards nature (Kellert 1997; Schultz 2002); (4) an *emotional* connection that incorporates feelings of attachment and empathy (Kals et al. 1999, Schuttler et al. 2018); and lastly (5) *philosophical* human-nature connections that refer to perspectives and worldviews about nature.

Figure 2. 1: Internal and external human–nature connections.



Source: Ives et al. (2018 p.1389).

These philosophical, moral or spiritual modes of connection, define various stances as to why nature matters and how humans ought to interact with it (Raymond et al. 2013). Ives et al. (2018) explain that those forms of connection range from external (e.g. the material or experiential) to internal (e.g. emotional or philosophical). They, however, do not operate in isolation but are often interrelated and do influence each other (Ives et al. 2018). Some forms of connection may seem more relevant in an individual sense (emotion, cognition), whereas others will be more relevant for a broader societal scale (philosophical, material, and experiential).

In summary, the literature emphasises that the human-nature relationship is multidimensional and consists of different external and internal aspects. Considering the different factors, it becomes obvious that people may be connected/disconnected from

nature in different forms and ways, which are important to investigate and understand in a place-based context. Qualitative research provides a mechanism by which to investigate the various dimensions of the human-nature relationship with a view to formulating more suitable approaches that will reconnect people with nature.

2.3.2 Nature connections and environmental behaviour

In the literature, connection to nature is often assumed to be an essential component and prerequisite for achieving environmental awareness and pro-conservation behaviour (Chawla, 1999; Larson et al. 2011, Kesebir & Kesebir 2017). Emotional attachment, place-based connection, cognitive knowledge and inclusion into nature are foundational components in this process (Kollmuss & Agyeman 2002, Mayer & Frantz 2004; Schultz 2011; Cosquer et al. 2012, Anderson 2014). The recognition and interest in Indigenous knowledge traditions for conservation practises thereby increases (Matulis & Moyer 2016), as scientists realize the importance of relational values of interconnectedness (Chan et al. 2016, Pascual et al. 2017, Schroeter et al. 2020).

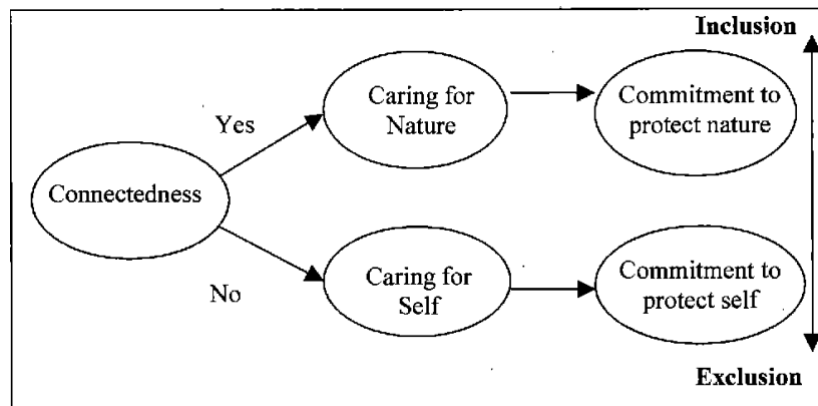
Researchers (Massey 1991; Ingold 2002; Poe et al. 2016) have also found that this also applies to people's relationship to places. Brehm et al. (2013) note that environmental awareness and ecological concern often starts with an emotional attachment to certain places or landscape. They found for example that people in developed countries tend to emotionally connect to certain places and subsequently consider them to be worth protecting, while ignoring other natural areas equivalent in physical shape and appearance. Emotional attachment and aesthetic appreciation tended to increase people's concern and the protection of a specific place (Halpenny 2010; Ramkisson et al. 2012; Tonge et al. 2015). Other studies found that the more people feel emotionally attached to a place and the place can satisfy their demands and needs, the more they are willing to spend money set aside for conservation such as via entry fees (Prayag & Ryan 2012; Wan 2021).

For example, forests and woodlands are a dominant landscape in Germany that have played an influential role in its socio-historical background. Hence, the German woodlands are considered part of the German cultural identity (Urmersbach 2022). Due to this emotional-aesthetic commitment, Germans attach a great value to their trees and forests as shown in the various environmental movements to protect dying of trees in the late 20th century (Lehmann 2001 p.241). Special bonds to certain places and landscapes also develop through positive childhood experiences (Louv 2019). Scholars (Pyle 2003 and

Louv 2005) argue that in order to cultivate nature connection, one has to start from childhood, as through the direct experiences and contact with nature it is possible for children to develop and shape a deeper nature connection. Don Gayton (1996) defines a landscape derived from deeply embedded childhood experiences as a “primal landscape”. This primal landscape is part of people’s self-identity and often acts as a measuring stick for later preferences with places and landscapes. Due to those childhood imprints people sometimes feel a specific emotional attachment to certain types of environments, places or landscapes as they connect with them on a deeper level and consider them to be worthwhile protecting (Gayton 1996). Nonetheless, some people may also have negative childhood experiences with nature, which explains why they feel uncomfortable in certain places such as a dark forest or an abandoned city park. The absence of positive childhood experiences and avoidance of nature due to negative experiences were found to be most influential in feeling uncomfortable, fearful, or disgusted in certain natural places later in people’s life (Sugiyama 2021).

Leopold (1970) also assumed that people needed to feel part of the natural environment and connect with it in order to foster ecological behaviour. He believed it would encourage individuals to act with love and respect towards nature. Roszak (1995 p.78) for example states “if the self is expanded to include the natural world, behaviour leading to destruction of this world will be experienced as self-destruction”. Harmful actions will thus supposedly decrease and empathy and willingness to help increase (Cialdini et al. 1997). Schultz (2001, 2002) also argues that the individual level of concern and a commitment to protect the environment relates to the sense of connection the individual feels with nature. Figure 2.2 shows how nature connectedness, caring and commitment to protect nature is part of an inclusive understanding of nature.

Figure 2. 2: Connectedness, caring and commitment – the core components of inclusion.

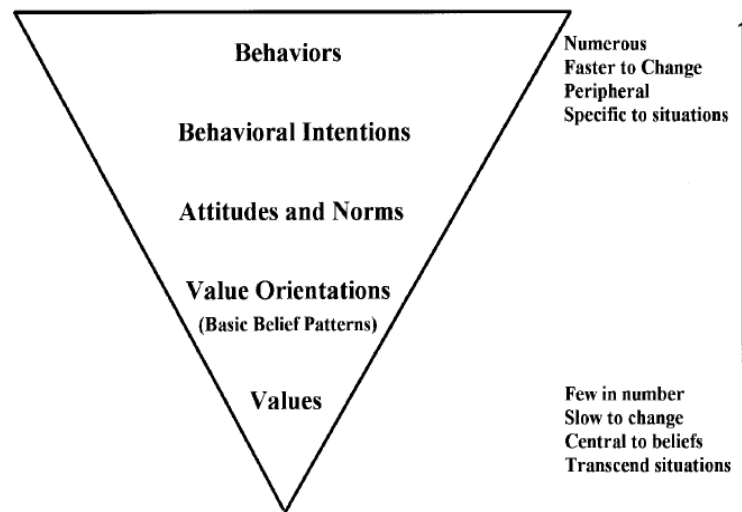


Source: Schultz 2002.

As emotional closeness and intimacy with nature increase, it is argued that the caring and commitment to protect it also increases (Kals et al. 1999; Schultz 2002; Mayer & Frantz 2004; Perkins 2010; Schuttler et al. 2018). Relatedly, other studies in the field of environmental psychology confirm that an emotional affinity toward nature is a strong predictor of nature-protective behaviour (Kals et al. 1999; Mayer & Frantz 2004; Nisbet et al. 2009).

Ecological attitudes and values are found to be significant indicators of pro-environmental behaviour. Figure 2.3 shows the cognitive hierarchy model of human behaviour developed by Vaske and Donnelly's (1999). Their model shows that values are fewer in number and form the foundational component on which value orientation, attitudes and norms, behavioural intention and behaviour are based.

Figure 2. 3: The Cognitive hierarchy model of human behaviour.



Source: Vaske and Donnelly (1999).

Attitudes, however, do not influence behaviour directly but affect only behavioural intentions (Ajzen & Fishbein 1977). Therefore, various barriers hinder people from acting according to their own pro-environmental belief system. This phenomenon is called the attitude-behaviour gap (Kollmuss & Agyeman 2002; Juvan & Dolnicar 2014) or the value-action gap (Blake 1999; Flynn, Bellaby & Ricci 2009). Possible reasons for *not* fulfilling one's behavioural intention are for instance a lack of practicality, a lack of responsibility or simply personal reasons like laziness or a lack of interest (Blake 1999). This can be understood by looking at people's motivation to undertake conservation behaviours. According to Stern and Dietz (1995), people act in an environmental-friendly way due to three core values, with these being (i) the biospheric value orientation (e.g. caring for all nature and animals), (ii) the altruistic orientation (e.g. caring for others like family or friends) and (iii) the egoistic motivations (primarily caring for one's own wellbeing).

Thomson and Barton (1994) describe an anthropocentric motivation or an eco-centric attitude in relation to some people's desire to protect the environment. Other people fall into the category of apathy. Similar to those attributed with egoistic motivation, an anthropocentric motivation for conservation is based on perceptions around a belief in the benefits nature provide for humans, such as improving the quality of life, individuals' health as well as the monetary value of ecosystem services or their material benefits. An ecocentric attitude, comparable to the biospheric value orientation, however, asserts

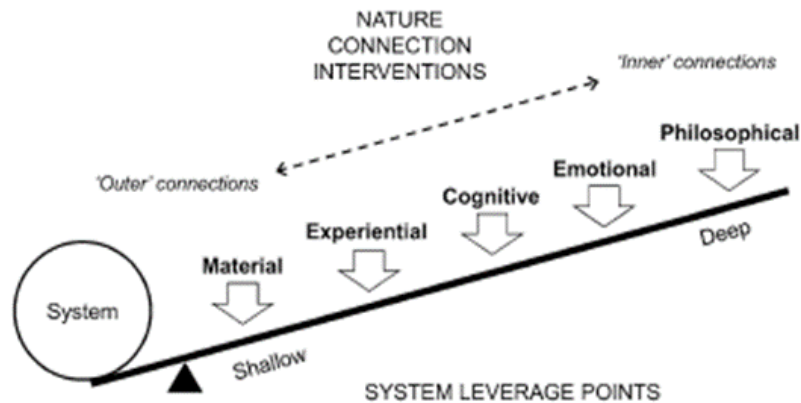
nature's intrinsic value⁶ regardless of its benefits for humans (Rottman 2014). People with such motivation value nature regardless of the economic or lifestyle implications of conservation as "nature has a spiritual dimension and intrinsic value that is reflected in their experiences in nature and feelings about natural settings" (Barton & Thomson 1994 p.150). Although they would agree with the anthropocentric wish for improving health and the quality of life, they nonetheless feel that "nature is worth preserving because of the transcendental dimension" (Thomson & Barton 1994 p.150).

Identifying people's underlying values towards conservation is worthwhile as, on the one hand it assists in understanding people's motivation and on the other, also helps provide insights into possible barriers that may occur. People with anthropocentric or egoistic values for example, will be less likely to protect the environment when it interferes with the benefits they gain from nature (e.g. wealth or material quality of life), whereas people with eco-centric or biopheric values would behave in a more environmentally friendly way even if doing so would include personal discomfort, inconvenience or additional expenses (Thomson & Barton 1994 p.150). This means people's subjective perception and estimation of circumstances motivates them to behave according to their values, attitudes and intentions, including the social/financial feedback/benefit they receive. Hence, people's willingness and ability to act is shaped by their perceived social reality as well as by their intrinsic motivation (Fietkau 1984).

To approach modes of human-nature connections with regard to sustainability, Ives et al. (2018 p.1391) developed a hypothesis regarding how different forms of connections with nature may be more or less effective in fostering sustainability. Figure 2.4 shows interventions designed to reconnect people with nature for a system change. This assessment is based on the accumulation of leverage points needed to bring about a change in the system (Meadows 1999; Abson et al. 2017; Leventon et al. 2021). Emerged from system thinking, leverage points are "points of power" as they are places within a complex system, such as ecosystems or human behaviour, where a small shift can produce big changes for the whole system. The amount of leverage points equals the amount of change in a system that can be achieved by the solution (Meadows 1999).

⁶ Intrinsic value is defined as the value someone, or something has in itself regardless its benefit to others (Lockwood 1999; Van den Born 2008).

Figure 2. 4: Intervention for reconnecting people with nature for a system change.



Source: Ives et al (2018 p.1391).

Ives et al. (2018) assume that strengthening inner human-nature connections within emotional or philosophical dimensions is most important in order to initiate change in the system and improve sustainability. They argue there is a strong relationship between spiritual practices, values and beliefs. Spiritual and religious orientations within a society and within individuals are therefore crucial to investigate, but are underestimated and under-researched factors (Hitzhusen & Tucker 2013) (Hedlund-de-Witt et al. 2014). Art and music, for example, can be used to assist build understanding of people's nature connection due to their potential to reach people's inner layers: they facilitate a transcending of the cognitive mind to convey a deeper meaning that might affect people on a more influential, subconscious level (Thomson 2015). 'Outer' connections, like the experiential or material one, only play supporting roles within this process and are unlikely to initiate system change by themselves. Nonetheless, strengthening all dimensions of the human-nature relationship might be most effective when inner and outer forms of human-nature connections are often intertwined and act in concert (Ives et al. 2018).

2.3.4 Nature Connection and Wellbeing

In 1970, philosopher and psychologist Erich Fromm firstly introduced the term "biophilia", which means a "love for life". Edward O. Wilson (1992) later popularised the idea that human beings have a biological inherent affinity and thus a genetically based propensity to affiliate with nature and all living beings. As Kellert (2012) argues, 90

percent of human evolution and survival was dependant on successful adaptation to the natural environment. Therefore, the human brain developed according to people's creative interaction and responses to overcome obstacles and solve problems in their natural environment (Wilson 1992). Studies have found that nature has shaped human emotional, sensual, cognitive and spiritual development and is crucial to ensure people reach their full (evolutionary) potential. As Kellert (2012) explains:

We are both, a biological creature who can construct and create our world through learning and the exercise of free will, but only if we remain true to our biological origins (Kellert 2012 p.xv).

Even though there is no genetic verifiable evidence for the biophilia hypothesis, related research indicates and underpins the biophilic assumption. Studies (Kaplan & Kaplan 1989), and across cultures (Ulrich 1993) have found that humans generally prefer natural environments with water, trees and other plants over built environments without such features. Although humans might also be attracted to human artefacts like cars or modern buildings, Khan (1999) argues that this affiliation does not necessarily exclude a biophilic tendency, but rather, that they both coexist. Studies also found that a close relationship with nature is also associated with improved health and wellbeing (Korpela & Hartig 1996; Hartig et al. 1997; Nisbet et al. 2010; Liu et al. 2022).

Based on these findings, the term 'therapeutic landscapes' has been introduced (Bell et al. 2015, 2018; Cooper 2018); and relates to the healing effects and increased wellbeing that are achieved through engagement with green and blue spaces (Voelker & Kistemann 2011, 2012; Mitchell et al. 2015; Zhang et al. 2020). The beauty of natural landscapes is argued to have restorative elements which makes it attractive for wellness practices, retirement homes or yoga retreats (Lea 2008; Coleman and Kearns 2015; Backmann et al. 2022). In this regard, correlations between nature connection, wellbeing and mindfulness are recognizable and identifiable (Howell et al. 2011). Environmental psychology also identifies the possibility of active and effective healing through interaction with green and blue spaces (Foley 2015), through physical activities (Richardson et al. 2013) such as swimming (Foley 2015), kayaking and surfing (Anderson 2012, 2013) scuba diving (Straughan 2010) and walking and running in parks (Wolf & Wohlfart 2014).

Nonetheless, Kellert (2013) argues that the biophilia hypothesis is only a weak tendency in humans and must be earned, cultivated and developed through learning experiences, social support and place-based connections. Moreover, studies suggest that it eventually

becomes dysfunctional, atrophies and might turn into over exaggerated exploitation and control over the environment (Kellert & Wilson 1995; Kellert 2012).

Based on the biophilia hypothesis Kellert (1997) also identified ten values of nature that highlight people's dependence and interconnection with the natural world. Box 2.1 gives more details on the values of nature for human's development. Kellert (1997) argues that these nature-based values play a significant role in human's development as they provide benefits for people's physical, mental, emotional and spiritual wellbeing.

Box 2. 1: Values of Nature for Human's Development.

Kellert identifies

- (1) the *aesthetic* value and appreciation of nature's beauty
- (2) the *humanistic* value manifested as a strong attachment and love for nature
- (3) an *ecologic-scientific* value that appreciates the study of the complexity of nature, its functions and relationships;
- (4) a *moralistic* value that expresses ethical concern for nature
- (5) a *dominionistic* value that incorporates a development of (cognitive and physical) skills to control and master nature
- (6) a *naturalistic* value that appreciates the direct experiences in nature and thus satisfies humans urge to discover and their curiosity and need to recreate;
- (7) a *utilitarian* value that recognizes nature as a practical and material use, thus resource for physical sustenance and security;
- (8) a *negativistic* value as a healthy fear or aversion from nature that protects human beings from possible dangers and risky behaviour so people maintain respect for the power of nature;
- (9) a *symbolic* value and use of nature for communication and mental development;
- (10) a *spiritual* value with feelings of transcendence and reverence for nature.

Source: Kellert's (1997 p.63)

2.4 Disconnection from nature

Although scholars interrogate the importance of human-nature connection, understanding disconnection from nature is also crucial. Scholars also argue that people are becoming increasingly disconnected from nature due to growing urbanisation and urban lifestyles. The following sections therefore present the scholarship on nature disconnection.

2.4.1 Defining nature disconnection

Despite an inherent tendency to affiliate with nature, many scholars have identified a growing alienation and separation among people from nature. Pyle (1993, 2003) argues that people's traditional relationship with nature to secure food and livelihood has changed and transformed, into an abstract, virtual and often shallow encounter with artificial and regulated 'natural' environments, where physical and emotional closeness and intimacy is difficult to achieve. In Western cultures particularly, the increased focus on technologies, mass media, and innovations diminishes people's contact with nature (Pergams & Zaradic 2006; Aruguete et al. 2019).

What the term disconnection to nature incorporates and describes is a definitive as much as a philosophical stance. It is often defined as a "physical and psychological (i.e., cognitive, affective and experiential) separation from nature" (Zylstra et al. 2014 p.122), and scholars refer to it as an "alienation from nature" (Schultz 2002), or that humans have become "cosmic outlaws" (Kellert 2003). Disconnection implies an "alienation", "separation", or "distance" from nature (Shaw 2007; Kellert 2013; Seppelt & Cumming 2016) caused by physical and psychological separation (Pyle 1993; Louv 2005; Kellert 2013; Zylstra et al. 2014; Schuttler et al. 2018).

Kellert and Wilson (1985) argue that nature disconnection often starts with an imbalance and dominance of a few environmental values over the others. Valuing the use of natural resources over other environmental values for example is particularly prevalent (Kellert 2012 p.64).

Problems arise when the exploitation become unsustainable, for example, maximizing short-term extraction of resources that discounts the future and ignores and undermines other environmental values.

Scholars (Ulrich 1993; Kellert 1997; Schultz 2002; Tam 2014; Zylstra 2018) also agree that the human-nature disconnection is the result of cultural values and discourses that

understand modernity and human progress as being independent, superior and separated from nature, values which have caused the ‘ecological crisis’. To demonstrate how unsustainable modern life has become, The New Economist Foundation invented the “Earth Overshoot Day”, which calculates the day on which humanity’s resource consumption for the year exceeds Earth capacity to sustainably regenerate those. Each country also has its own overshoot day, which visualises that developed countries use more natural resources than developing countries and highly contribute to this overshoot of biological resources (Global Footprint Network 2022).

The dominance of this belief system results in a desire to transform, overcome or even transcend nature with the help of technology and innovations⁷ (Kellert 2021). Further, an increased focus on technology and mass media contributes to the human-nature disconnection and is mirrored and perpetuated in cultural products like the usage of language (Aruguette et al. 2019).⁸ Words and expressions related to nature have decreased, which means that besides a physical disconnection, people are also losing symbolic contact with nature (Kesebir & Kesebir 2017). In 2015, for example, the Oxford Junior Dictionary excluded many words relating to nature, such as canary, clover, pasture, and blackberry to make room for neologisms such as attachment, blog, voice-mail, and BlackBerry (Flood 2015). This alienation and separation from nature is referred to as a “crisis in consciousness” (Pyle 2003; Zylstra et al. 2014; Douzal 2019). On the other hand, new words such as eco-anxiety and climate refugees were added to the Oxford English Dictionary (Steward 2021), which demonstrates that people also perceive nature and the consequences of climate change as a threat to their future.

In gender studies, scholars even point out that this controlling mindset goes hand in hand with the domestication of the “naturalness” of the human body. Shaw (2007) for example argues that current and socially accepted norms disregard humans as sensual beings to promote body images of cyborgs, shaped and formed according to one’s own will. This, she criticises, epitomizes the current state of disconnection from what is ‘natural’.

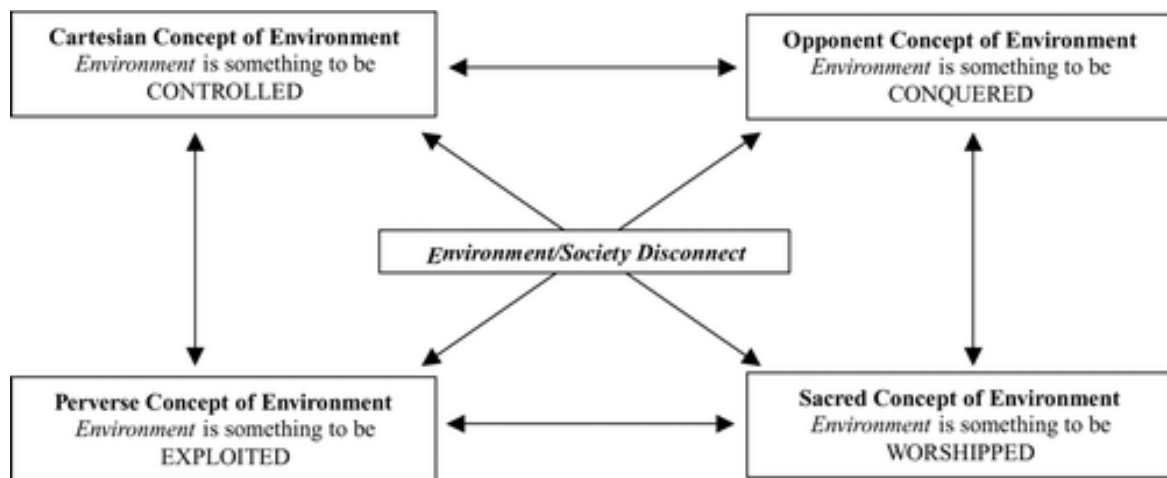
Barry (2009) argues that there are four belief systems and discourses in the Western world that fuel the environment/society disconnect and which he calls the concept tetrad of the environment. The four discourses displayed in Figure 2.5 are: (1) the *Cartesian Concept*, that constitutes the environment as something to be controlled, the (2) *Opponent*

⁷ Referred to as techno centrism: technological optimisms that believes to conserve and solve environmental problems not by changing behaviour but with the help of advanced and improved technology.

⁸ The average child in us spent nowadays less than 40 minutes outside whereas 20 years ago it was 4h. However daily they engage in 5h in electronic media (Kellert 2013).

Concept, that views nature as something to be conquered, the (3) *Perverse Concept*, that constructs the environment as something to be exploited, and the (4) *Sacred Concepts* of environment, that portrays humans as the ‘enemy’ of nature. These discourses and belief systems “create a powerful meta-narrative that has resulted in the environment/society disconnect pervading the industrialized world” (Barry 2009 p.125).

Figure 2. 5: Concept tetrad of environment informing the environment/society disconnect.



Source: Berry (2009 p. 119)

These forms of societal disconnect, Schultz (2002) argues, arise from the way the western world degrades and capitalizes nature as an entertainment, leisure, or luxury product. Some “nature lovers”, Schultz (2002) believes, hold romantic, idealized views of nature that lack a realistic and profound understanding of natural processes and developments. Zylstra et al. (2014 p.119) therefore, claim that “the Western disconnect from nature is central to the convergent social-economic crisis and primarily a problem in consciousness”.

Other scholars have also identified a negative affiliation with nature. Orr (1993 p.416), for example, coined the term biophobia, described as feelings ranging from

... ‘discomfort’ in natural places to active scorn for whatever is not man-made, managed, or air-conditioned. ... [It is the urge] to affiliate with technology, human artefacts, and solely with human interest regarding the natural world.

In later studies, Ulrich (1993) applied the concept of biophobia and demonstrated various forms of negative affiliation with nature, such as the fear of snakes, spiders, and other anaesthetic insects. The fear of heights also identified with these forms of nature disconnection. Biophobia is therefore a rationale for and obstacle to the capacity for engagement with nature, especially in urban contexts (Patuano 2020).

2.4.1 The modern lifestyle

Scholars argue that current lifestyle models affect people's experiences with nature. This manifests as decreased time spent in nature (Matz et al. 2015; Wang et al. 2019), the decline of knowledge about local plants and animals (Soga & Gaston 2016), as well as a disappearing affinity towards nature (Schuttler et al. 2018). Richard Louv (2005) describes this as a "nature deficit disorder" and emphasises the diminishing contact and knowledge people have about their local environment, mainly because they do not interact with it anymore (Lacoeuilhe et al. 2017). "Knowledge-belief-practise" patterns, however, are important for bridging cultures with nature and the transfer of local knowledge into collective knowledge that guides people's actions (Berkes 2004).

Children are also affected. Studies conducted in the United States found that the average child spent less than 40 minutes outside whereas 20 years ago it was 4 hours (Kellert 2013). Other scholars (Weir et al. 2006; Loebach & Gilliland 2014) argue that parental concern about the safety of outdoor environments is a reason for the limited experience of children in nature. Parents who spent less time in nature are also less likely to encourage their children to play outside and engage with nature as they did not build up this relationship themselves during their childhood (Schuttler et al. 2018; Soga et al. 2020). Emotional affinity, however, develops through positive childhood experiences and direct interaction with nature (Hatfield & Rapson 1993; Chawla 1999; Dunn et al. 2006). Consequently, indifference and alienation from nature grows with every generation, and modern urban life-styles become the norm (Miller 2005). This in turn creates lower expectations that biodiversity needs protection, as there is a diminished understanding of what has been lost (Schuttler et al. 2018 p.406).

2.4.2 Urban living

Where people live is one of the most basic ways in which people will experience and interact with nature. As scholars (Maffi 2007; Toennies & Buschmann 2012) argue, spatial circumstances and the physical appearance of places frame the setting in which

people's life unfold and hence shape cognition and social structures of cultures. As Tuan (1990 p.79) explains:

...natural environment and the world view are closely related: world view is necessarily constructed out of the salient elements of a people's social and physical setting.

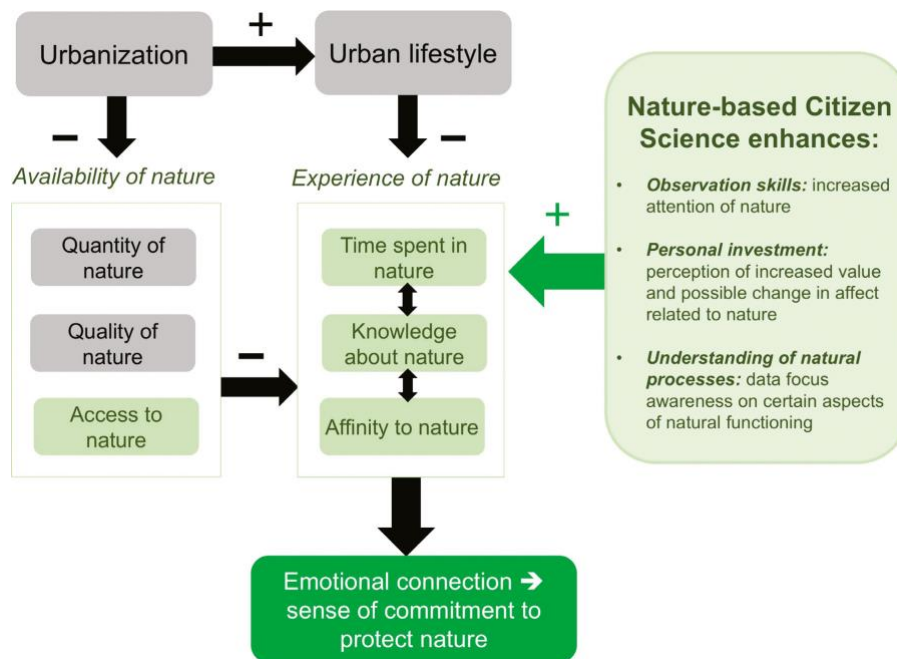
Other researchers argue that the transition from a land-based economy towards an urban industrialized world has created a growing alienation and separation from nature, in which nature plays a subordinate/marginal role (Cronon 1995; Vining 2008). Functionality and the convenience of fast-growing areas in cities now replace charm and character as desired attributes. Scholars (Smith & Relph 1978; Kellert et al. 2013) argue that this development weakens identity with place and connectivity between people and places is lost. Places that lack human influence and engagement do not convey a sense of belonging and thus do not encourage people to emotionally care or look after them. Such a trend marks a major shift in the "geographical bases of existence from a deep association with places and rootlessness" (Smith & Relph 1976 p.254).

Due to the growing trends in urbanisation, it is estimated that people now spend around 90 percent of their time indoors in built-environments, ones that lack fresh air, sufficient daylight or other exposure to the natural environment, and which create additional physical separation from nature (Kellert 2012; Matz et al. 2015). The literature argues that cities are filled with "potent stimuli" that constantly demand a sensory and emotional attention (Zylstra et al. 2014 p.123). Electronic devices, advertisement, traffic, crowds of people and other visual and acoustic distractions occupy people's awareness and often increase the illusion of separation from nature, their attention consumed by these stimuli. This "inattention-nature-blindness", creates separation from nature, as people do not experience themselves as being part of natural processes anymore (Zylstra et al. 2014 p.123). Moreover, consumer-oriented lifestyles in dense and busy built environments distract people's attention from nature, causing a psychological or physical separation (Pilgrim et al. 2010), so they are less likely to pay attention to natural elements such as recognizing seasonal changes (Puppim de Oliveira et al. 2011, Soga & Gaston 2016; Stokols 2018; Citton 2017).

Figure 2.6 shows the impacts of urbanisation and urban lifestyle on the human-nature relationship according to Schuttler et al. (2018). In their model, urbanisation is a main driver of the human-nature-disconnect leading to decreased commitment to care and look after nature. The limited opportunities urban areas offer to interact and experience

nature initiates a negative cycle that fosters alienation and (emotional) separation from nature (Turner et al. 2004; Pett et al. 2016; Soga & Gaston 2016).

Figure 2. 6: The impacts of urbanisation and urban lifestyle on the human-nature relationship.



Source: Schuttler et al. (2018).

Scholars (Elmqvist et al. 2016; Clucas et al. 2018) also argue that growing urbanisation limits the quantity and quality of nature. Growing pressure on the housing markets, expanding cities and construction sites decrease the space available for nature. The limited quantity of nature in cities often means that green areas and natural elements become luxury products. Studies show that green neighbourhoods and living spaces with gardens, natural views, or access to parks are more expensive than other places without such features and sometimes act as a status symbol (Iverson & Cook 2000). Green space is hence more often located in wealthier neighbourhoods, which means people in poorer neighbourhoods have less contact with nature in their daily life (Brooks et al. 2016; Gould & Lewis 2017).

Further, in most cities around the world, nature in urban has been altered and transformed by pollution. They become landscapes that contain little biodiversity and natural variety (Dunn et al. 2006; Ives et al. 2017). This results in biocultural

homogenization (Celis-Diez et al. 2017). A few selected and invasive plants that have little in common with native flora and fauna (Dunn et al. 2006), tend to dominate places where people could encounter nature such as city parks, green belts or botanical gardens. Those publicly accessible areas often limit and restrict contact with nature through rules and regulations. Behavioural norms conveyed by a society may limit meaningful and profound interaction with nature in public places.

Hall (1997) claims that an ‘installed reality’ constructs what nature is and how humans belong to it, dominant belief systems are enforced and reproduced. Botanical gardens, parklands or conservation areas with fences and bridges might strengthen the perception that humans are separate, even harmful for nature. (Emotional) connection and caring for the environment however derives from positive experiences and interaction with nature (Chawla 1999; Schuttler et al. 2018; Soga & Gaston 2020). These “artificial spaces” thus fail to deliver deep intimate contact with nature as people only establish superficial connections and only “skim the surface of the landscape, reaping a shallow reward and a weak relationship...” (Pyle 2003 p.207). Other studies found that a growing disconnection from people’s local environment in cities is especially obvious within children’s development. “Unofficial countryside”⁹ in urban areas provided children with opportunities to explore and discover local nature without being restricted through fences, mandatory paths or other rules. Those secondary habitats, however, decline with children’s opportunities of free play compromised in cities (Pyle 1993).

2.5 Ways forward: reconnecting people with nature

Despite levels of connection or disconnection with nature, there are many ways to reconnect people with nature and presented here. They represent ideas around how to counteract the growing alienation and separation of people from nature.

2.5.1 Reconnecting people with nature in urban environments

As future conservation depends on positive interactions and experiences with nature, cities play a vital role in providing contact with the natural world on a daily basis. Increasingly, urban planners are acknowledging the need for green spaces and the reintegration of nature in cities for both ecological and wellbeing reasons. At the same time, the role of urban areas in nature conservation becomes more important as cities

⁹ For example, abandoned industrial sites or vacant lots (Mabey 1973).

provide living space for endangered species (Miller & Hobbs 2002; Dunn et al. 2006; Elands et al. 2019), and contribute to local biodiversity conservation and climate change adaptation (Bateman et al. 2012; Hartig & Kahn 2016; Haase et al. 2017).

Scholars (Kabisch et al. 2015; Kondo et al. 2018) argue that in dense cities with a growing population, maintaining enough green space and natural elements to provide meaningful and diverse human-nature practises is critical. They argue that urban restoration projects such as green way programs or self-governance of green spaces do not have to be costly but are vital to increase the presence of nature. Angelo (2019) argues that cities have transformed people's relationship with nature as former agricultural labourer became bourgeois urban citizen and developed a new relationship with nature that was not characterized by material needs but by leisure and recreation. She therefore believes that urbanization turned nature into a moral good one, pushing the idea of greening cities as it is thought to provide solutions to problems of large industrial cities.

Many cities have therefore started to implement "civic ecology practices" such as urban gardening, public participation in green space restoration and development, and self-governed greening in the neighbourhood to try to reverse the negative cycle and encourage a "local stewardship" and place bonding (Andersson 2014; Buijs et al. 2018; Eland et al. 2019). To increase positive interaction and contact with nature among a broader spectrum of urban residences, Dunn et al. (2006) suggests more emphasis on the distribution of nature, especially in poorer neighbourhoods. Urban planners and policy makers have started to implement concepts such urban green infrastructure and encourage use of urban green space in a multifunctional way (Hansen & Pauleit 2014; Pauleit et al. 2017; Vierikko et al. 2020).

To further reverse the negative cycle of declining urban biodiversity, urban restoration projects are also increasingly focussed on the restoration of native ecosystems and sustainable greening of cities (Goddard et al. 2010; Beninde et al. 2015; Elands et al. 2019, Vierikko et al. 2020). The growing popularity of urban gardening, community gardens, beehives or deliberately cultivated areas that provide living space for insects are examples of attempts to increase biodiversity in cities (Cabral et al. 2017), and at the same time foster urban-human food connections (Artmann et al. 2021). Urban agriculture thereby integrates new concepts and techniques to grow plants and crops in unused space, such as rooftops as an innovative approach for sustainable urban development (Hoffmann 2018).

Due to these positive developments some urban areas now exhibit a broader variety of biodiversity than rural environments, where agricultural intensification and monoculture dominate the landscape and threatens species richness and population size (Zeller et al. 2017). With the help of citizen-science-data about dragonflies in Germany, for example, Goertzen and Suhling (2018) found that urban places have actually maintained superior levels of species diversity than some agriculture ones. In other cases, certain flora and fauna have evolved and adapted either genetically or behaviourally to cities and are hence unique to urban environments (Mc Donnell & Hahs 2015). Urban habitats may hence become crucial for threatened species and biodiversity (Zeller et al. 2017).

Global campaigns such as ‘Wild Cities’ and the ‘National Park City Foundation’ are examples of initiatives that attempt to reconnect urban societies with a wider, more diverse natural environment (Metta & Olivetti 2021; Wong 2021). Studies (Kowarik 2011; 2021) in Germany for example, are developing and integrating “novel urban wilderness” into green infrastructure to reconnect people to their local environments and preserve biodiversity. Moreover, the integration of natural elements into the built environment, such as architecture based on biophilic designs, are other progressive ideas that can facilitate sustainable and harmonious coexistence with nature in cities (Heerwagen et al. 2013; Xue et al. 2019).

As such, Eland et al. (2019 p.30) argue that cities cannot be classified as “antipodes of nature”, but rather should be seen as a “cultural landscape embodying a specific type of co-evolution between nature and culture”. Urban nature then can be understood as a dynamic co-evolution between people and nature expressed in deliberately designed ‘assemblages’ and organically evolved natural diversity in cities (Kowarik 2011; Puppim de Oliveira et al. 2011; Eland et al. 2019). Biocultural diversity emphasises the interrelatedness between humans and nature, as it considers humans as agents of ecosystem change (Buizer et al. 2016; Pauleit et al. 2017; Vierikko et al. 2020). The deployment of biocultural diversity in cities is one way to facilitate a shift in discourse and cultural perspective about nature being a (pristine) wilderness, towards a more dynamic and inclusive understanding of nature (Wiersum 2017; Threlfall & Kendal 2018; Eland et al. 2019).

2.5.2 Reconnection and nature conservation

Despite attempts to reintegrate nature back into urban living spaces and encourage people to spend more time outside, Shwartz et al. (2014) notes that there is still the danger

that people's nature-connection might be reduced to such amount that nature might not be noticed anymore. Coldwell and Evans (2017) therefore point out that a crucial step to connect with nature is to learn how to take the time to notice elements of nature around them. Citton (2017 p.182) calls this approach the intention to cultivate an 'attention ecology':

[A]n attention ecology will have to learn to valorise this exceedance of curiosity eager to be astonished by everything that, in our objects of knowledge or perception, exceeds the categories and anticipations through which we set about grasping them.

Such an attempt to increase people's attention and emotional connection with nature is nature-based-citizen-science. This science is an approach that can counteract the so-called 'extinction of experience' and reconnect people with nature and nature-conservation (Lewandowski & Oberhauser 2017). Scholars (Cooper et al. 2007) argue that besides its scientific benefits, citizen science encourages experiences in nature as well as involvement in conservation projects, and a gain in firsthand knowledge. This 'paying attention' can increase emotional nature connection and caring to build the foundation from which a sense of commitment to protect the environment can evolve and develop (Schuttler et al. 2018). Scholars argue that this approach has potential to revitalize the human-nature relationship and increase opportunities to positively influence environmental behaviours, place attachment and attitudes (Overdeest et al. 2004; Lewandowski & Oberhauser 2017; Schuttler et al. 2018, Toomey et al. 2022).

Despite people's modern lifestyles, Taylor (2016) argues, people's desire and interest in reconnecting with nature was evident in the rising memberships of societies interested in birds, butterflies, native plants, and other conservation activities. This desire can also be seen in the growing numbers of outdoors-activities (Jackson et al. 2021), as well as the increasing popularity of remote eco-holiday destinations (Stronza et al. 2019), nature-documentaries and environmental writing (Jones et al. 2019).

However, while there is widespread recognition of the importance of reconnecting with nature as a prerequisite for conservation purposes and sustainable behaviour (Kollmuss & Agyeman 2002; Schultz 2002; Mayer & Frantz 2004; Schuttler et al. 2018), little progress has been made in achieving and implementing those ideas into conservation practises (Zylstra et al. 2014). That there is an apparent lack of understanding of the relevance and significance for societal problems by governmental bodies, business sectors and by the general public (Maller 2008; Dirzo et al. 2014). This might be because

“reconnection” is a diffuse concept. It implies the need to gain back what has been lost and implies a “call for behavioural change”. In contrast to the measurable state of nature connection, reconnection “is action- and process-oriented, [and] difficult to pinpoint as a measurable ‘state’” (Zylstra et al. 2014 p.121).

How successful current approaches to reconnect people with nature in urban environments are, and which options people actually know and use, needs further investigation and clarification. Such investigations are helpful to adjust and improve the process of reconnecting people with nature and to evaluate and improve measures for nature-conservation to improve ecological wellbeing.

2.6 Research gap: rural living and comparison

This literature review has discussed the ways in which scholarship has examined the human-nature relationship, especially in urban areas and highlights that it is an emerging and expanding research field, one focussed on exploring ways to identify and reduce the alienation and separation from nature. In contrast, there is limited research on human-nature connection and disconnection in rural areas and to date more focused on farmer relationships with their land. Quantitative research for example often examines farmers’ place attachment (Quinn & Halfacre 2014), or farmer identification as landscape stewards in an attempt to find correlations with their commitment to protect the environment (Raymond et al. 2016). Other studies confirm that emotional association with land increases farmer commitment to care for and protect non-human species (e.g. Gosling & Williams 2010).

Scholars however, also argue that farming and food production in rural areas especially in European countries has shifted and changed into a commercialized and dependent system, controlled by globalized food production. This development has pressured many farmers into increasing their productivity by lowering costs achieved partly by higher use of pesticides and chemicals (Anderson 2010). This indicates that sustainability and environmental wellbeing is not only dependant on people’s own values and beliefs, but is also dependent on the societal framework that regulates and manages nature. More research on people’s nature connection in rural areas would clarify how they relate to nature and how the production of natural resources affects and shapes this relationship. Moreover, more investigation is required regarding a broader societal framework to

examine how nature is distributed, used and managed so we can understand how and why people act and relate towards nature in a certain way.

Further, scholars (Benet 1963; Lupri 1967) argue that many people in rural areas do not work in agriculture and farming anymore and claim that modernisation has transformed the rural-urban divide into a “rural-urban continuum”. Faridhi (2018 p.386) for example claims that in European countries:

... there is rarely, either physically or socially, a sharp division, a clearly marked boundary between the two, with one part of the population wholly urban, the other wholly rural.

Anderson and Kretenauer (2021) claim that increasingly rural residents may be equally characterised and determined by a growing separation and disconnection from nature that is emerging in urban areas. Some studies find that the conceptualisation and experience of nature differs among young adults and children in rural and urban settings. When “countryside” was considered an important part of a rural resident’s identity and lifestyle, the difference amongst children growing up in urban areas was found to be more distinct (King & Church 2013). Other studies (Loebach & Gilliland 2014) negate differences in the nature connection among children from urban and rural areas. In fact, Loebach and Gilliland (2014) assume that the greater mobility of the urban youth enables them to connect and experience nature in a similar way to rural youth. What the human-nature relationship currently looks like in rural areas in a European context and how that differs from urban areas is unclear.

The comparison of nature-connection in rural and urban areas becomes even more relevant as recent studies challenge the assumption that urbanisation per se is causing an emotional detachment from nature. A comparative study in Kenya for example found that urban residents felt emotionally *more* connected with nature compared to people in rural areas with more traditional lifestyles (Marczack & Sorokowski 2018). Based on these findings they assumed that emotional affinity with nature increases when people associate nature with relaxation and leisure, rather than with some of the more uncomfortable and threatening aspects of nature such as droughts, work, or dangerous animals. Another study compared rural and urban residents’ nature connection in Canada and found that emotional connections between both participant groups were equally high (Anderson & Kretenauer 2021). Urban residents, however, especially females, demonstrated a significant higher level of pro- environmental behaviour, which could be a result of the available infrastructure in cities (Anderson & Kretenauer 2021).

The literature review found that despite substantial attention to nature, and how modes of connection and disconnection can be made, as yet, there has been minimal work on comparing urban and rural experiences of the nature connection. This study seeks to contribute to this gap in understanding, and using two case studies in Germany, investigating differences in the human-nature connection between urban and rural residents, and to document how internal and external factors shape nature connection and disconnection, with a view to understanding their implications for policy.

2.7 Summary

This literature review has demonstrated that the human-nature relationship is a broad and interdisciplinary field researched and framed through different angles and lenses (Zylstra et al. 2014; Ives et al. 2017). The first section of the review presented the different perceptions and conceptualizations of nature. The second section explored the different components of the human-nature relationship and evaluated internal as well as external aspects of nature connections. The review demonstrated the importance of nature connection for ecological behaviour and the further link to improved health and wellbeing. Moreover, it has discussed the topic of disconnection from nature caused by increased modernisation and growing urbanisation. Lastly, reconnection measures were considered to fill a research gap regarding studies comparing nature connection in urban and rural living environments and its implications.

This literature review demonstrated that nature disconnection is one of the main reasons for the 'ecological crises' that needs to be addressed for environmental change (Kellert 2012; Zylstra et al. 2014). Urbanisation was another important factor contributing to people's disconnection, as proposed by scholars (Kellert 2003; Schuttler et al. 2018) who argue that cities separate and alienate people from nature by reducing their contact and interaction with the natural world. This "extinction of experience" (Pyle 1993) is thought to reduce people's emotional connectivity and affiliation with nature (Kellert 2003, Turner et al. 2004; Pett et al. 2016; Schuttler et al. 2018), which are foundations for developing a sense of caring and commitment to protect nature (Kals et al. 1999; Mayer & Frantz 2004; Schuttler et al. 2018).

Previous research has mainly focussed on the quantitative measurement of nature connections by converting feelings, perceptions, beliefs and behaviour into numbers and scales. Most of the former studies measured behavioural components, emotional attachments and cognitive belief pattern without exploring underlying factors such as

people's living environment. Rather than quantifying aspects of nature connection, the focus of this research is on understanding factors and implications of people's relationship with nature in a place-based context.

Reviewing the literature has shown that comparing nature connections and disconnections in rural and urban areas is an under researched field with many controversies that needs further investigation in a place-based context. A research gap exists in knowledge about people's nature connections and disconnections in rural and urban areas within a western context. Research focussed on ways nature connections and disconnections affect and shape environmental behaviour and people's wellbeing in both living environments is conducted in this project.

3 RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology applied to fulfil the research aims and objectives of this project. The overarching aim of this study is to investigate and explore how individuals connect to nature in Germany and how where they live shapes this relationship. With the help of a qualitative case study design, this research sets out to answer the following research questions as they relate to Germany:

1. What are and how do the modes of human-nature connection manifest in rural and urban areas?
2. What are and how do the modes of human-nature disconnection manifest in rural and urban areas?
3. Does nature connection and disconnection affect pro-environmental behaviour and ecological wellbeing?
4. What are the implications of the findings for policy and planning?

Instead of measuring nature connection quantitatively, the focus of this research is explorative in nature. Rather than only quantifying aspects of nature connection, this research aims to understand the factors and implications of people's relationship with nature in a place-based context.

This chapter begins by introducing the epistemological position and research philosophy behind the study. Followed by a description of the case study area and locations. The next section then presents a detailed account of the data collection methods employed to answer the research questions posed. The last section provides information on the data analysis technique applied in this study.

3.2 The research philosophy

Epistemology determines the philosophical assumption about the nature of knowledge and its acquisition within research projects (Ormston et al. 2014). The epistemological position of this research draws from interpretative frameworks that posits that social

actions are meaningful to actors and require understanding from their point of view (Hughes 2016). As Charmaz (2000 p.521) states:

People create and maintain meaningful worlds through dialectical processes of conferring meaning on their realities and acting within them.

Hence, every participant, including the researcher interprets reality and develops knowledge based on their specific life experiences, belief systems, social interactions as well as sensual perceptions (Neuman 2006; Ormston et al. 2014).

In contrast to a positivist stance that measures external and observable behaviour (Neuman 2006), this research is based on the assumption that the study of social reality requires an understanding of human behaviour to grasp the subjective meaning of social actions (Bryman 2016 p.30). Environmental behaviour and interactions with nature, for example, can be observed and measured externally, but will not provide any reasons behind certain actions. Therefore, a positivist approach could not reveal why people behave in certain ways, for example, why they do or do not look after the environment.

To explore peoples' relationship with nature and to understand how and why modes of nature connection and disconnection might occur, it is essential to learn about residents' feelings towards nature, their individual experiences in nature, as well as their underlying belief patterns and perceptions, as this knowledge forms the basis of their behavioural motivations. Based on those assumptions, a case study research design and qualitative data collection methods were chosen and are described in the following sections.

3.3 Research design

Case study research has a long tradition in Social Science and Human Geography, and often used to understand concrete and practical aspects of a phenomenon in one or more places (Yin 2000). A case study is:

... the study of a single instance or small number of instances of a phenomenon in order to explore in-depth nuances of the phenomenon and the contextual influences on and explanation of that phenomenon (Baxter 2016 p.130).

Qualitative research methods such as interviews, document analysis or participant observation often underpin a case study approach (Bryman 2016; Gray 2009). This means, they provide a multi-faceted, in-depth investigation of the manifestation of a phenomenon through various lenses. Given the fact that the human-nature relationship

is a multidimensional and complex research issue, a qualitative case study design is a suitable approach to ensure a detailed investigation of what modes of nature connections and disconnections look like and how they manifest in rural and urban areas in Germany.

Previous research has mainly focussed on the quantitative measurement of nature connection and used quantitative measures to represent feelings, perceptions, beliefs and behaviour. Environmental psychologists have developed the following quantitative scales and questionnaires such as: the Perceived Restorativeness Scale (PRS) (Hartig et al. 1997); the Implicit Associates Test-Nature (IAT) (Greenwald et al. 1998); the New Environmental Paradigm scale (NEP) (Dunlap et al. 2000); the Inclusion of Nature in Self Scale (INS) (Schultz 2002); The Connectedness to Nature Scale (CNS) (Mayer & Frantz 2004); and The Nature Relatedness Scale (NRS) (Nisbet et al. 2009). These scales and questionnaires measure people's connection with nature and correlate that information with their environmental behaviour and/or wellbeing. In this thesis, rather than quantitatively measuring feelings, perceptions, value systems, and implications, the focus is on a qualitative exploration into how different places, e.g. different urban and rural environments shape the human-nature relationship and whether those different human-connections possibly influence environmental behaviour and wellbeing.

As case studies are characterised by deployment of a holistic perspective in order to explore a complex phenomenon in its natural setting (Denscombe 2010; Zainal 2007), it allows the researcher to use multiple-data collection methods from a variety of sources to fully grasp the phenomenon (Yin 2009; Denscombe 2010). In this project, qualitative data collection methods were used and to conduct 24 semi-structured interviews with rural and urban respondents as well as 10 in depth-interviews with practitioners¹⁰. To embed the interview data into a broader place-based context, document reviews contribute to the data collection.

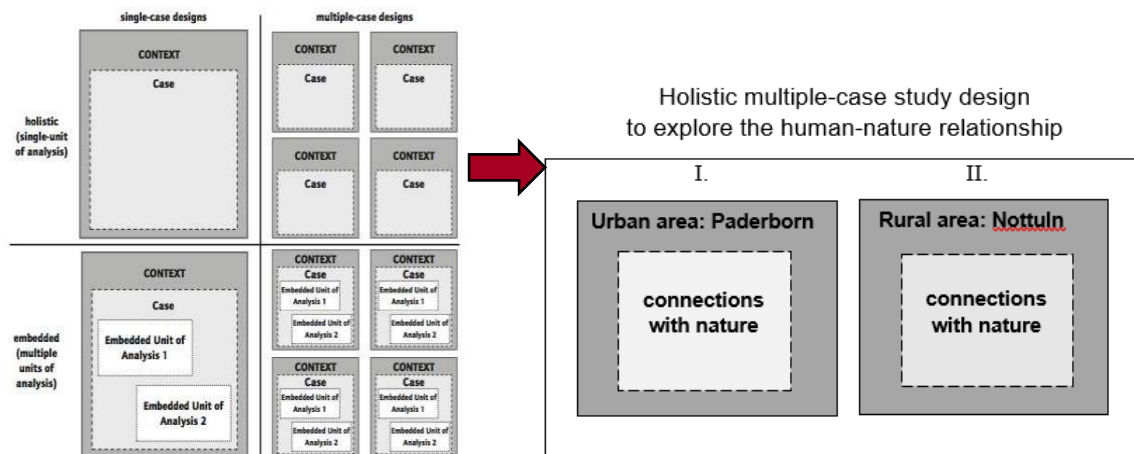
3.3.1 Design choice

Figure 3.1 demonstrates the four basic types of case study designs and their adaptation for this research. The four different case study designs are: (1) a single case design with a unitary unit of analysis, (2) a single case design with multiple units of analysis, (3)

¹⁰ Doing research that includes humans requires ethical considerations to prevent any harm to participants. This research project was thus reviewed and approved by the Office of research Ethics, Compliance and Integrity by the University of Adelaide under the ethics approval number: H-2019-224.

multiple case studies with single units of analysis or (4) multiple case studies with multiple units of analysis (Yin 2009).

Figure 3. 1: Basic types of case study designs and its adaptation for this research.



Source: Yin (2009).

This project applied, a multiple case study design with a single unit of analysis. Exploring the same phenomena among the same cultural group but in different places provided more depth and insight into a phenomenon (Dunn 2008). This type of design also called a comparative case study or parallel case study (Yin 2009). The advantage of a holistic multiple case study design is phenomena from more perspectives can be studied occurring differently from one case to the other due the context of place (Baxter 2016; Gustafsson 2017). This case study design is considered more robust and reliable than a single case one (Zach 2006).

As shown in Yin's model (2009), cases are always analysed and understood with regard to their contextual conditions. For this research where people live functions as the contextual background where the human-nature relationship unfolds. Although a specific research phenomenon does not always have to be place specific (Baxter 2016 p.141), human geographers argue that place and the environment people live in constitutes an influential factor for the human-nature relationship. Understanding the role of place might reveal how urban and rural areas, as quite different and distinct places, may affect the human-nature relationship, and whether where people live might impact and influence connection, alienation and separation from nature.

Sampling is a crucial step for the multiple case study design. As Yin (2009) notes, there are two approaches for the selection process. The first one is called literal replication and applied when cases are assumed to predict similar results. The other one, theoretical replication, is chosen when the researcher selects cases that predicts contrasting results for anticipated reasons (Yin 2009). To understand how urbanisation affects and shapes nature connections and disconnections, two contrasting regions were selected, namely a rural and an urban area in Germany. Nottuln is the rural area and Paderborn the urban. The comparison between rural and urban areas also provides insights into the respective influence of city size, exposure to nature and the management of the environment in both case study locations.

3.4 Qualitative data collection methods and analysis

This project deployed qualitative research methods to collect primary data in Germany. Data collection comprised two phases. First, 24 semi-structured interviews were conducted with a diverse range of respondents from both urban and rural case study locations. After completing those interviews and gaining an understanding urban and rural residents' relationship with nature, 10 unstructured in-depth interviews with practitioners were conducted to understand the human-nature relationship from an external perspective. The second phase of the data collection sought to gain outside perspectives on urban and rural residential nature connection and disconnection from practitioners in the field. The interviews further provided background information and context for both case study locations regarding city developments and policies in place. In addition to that, secondary data sources such as policy documents, agreements on conservation standards, city development plans, as well as, biodiversity and climate change, were reviewed and analysed to embed the primary data into a broader context.

3.4.1 Interviews

Interviews are often described as a conversation with a purpose where one of the persons inhabits the role of a researcher (Webb and Webb 1932; Burgess 1984). They are most likely used in qualitative studies as they “give an authentic insight into people’s experiences” (Silverman, 1993 p. 91). As Gray (2009) explains, interviews are useful to gain knowledge from people, but they also reveal people’s values and subjective perceptions.

Qualitative interviews are therefore helpful to collect a diversity of meanings, opinions and experiences residents had with nature but also revealed emotional and cognitive aspects of that relationship. This is an advantage and fills a knowledge gap that observations or other census data cannot provide as interviews procure the reasoning and meaning behind actions and behaviour (Minichiello et al. 1995; Rabiee 2004). Where questionnaires often fail to mirror the social world of respondents, interviews “gain access to the meaning which subjects attribute to their experiences of these worlds” (Cloke et al. 2004 p.149). Therefore, interviews provide an understanding about the ways that internal factors, such as cognitive knowledge, perception, or attachments, as well as external factors, such as the living environment, or material connections shape people’s relationship with nature. In fact, the researcher can explore the subjective meanings (Fielding 2016 p.150) that residents ascribe to nature and discover how and why people interact with nature in a certain way. Therefore, qualitative interviews are useful to investigate and understand complex behaviour and behavioural motivations.

3.4.1.1 Internet-based interviews via “zoom”

Internet-based data collection is now a well-established field of research (Shields 2003; Kanzaki et al. 2004; Pang et al. 2018). Conducting qualitative interviews via an online venue is a variation of the traditional face-to-face interview method, which provides many advantages such as having greater flexibility around time and location (Jankowski & Selm 2005; Lo Lacono, et. Al. 2016; Lobe et al. 2020). Due to the global pandemic and travel restrictions in place at the time, the data collection in the two case study locations in Germany had to be carried out from Australia. For this purpose, the video conferencing platform zoom was chosen as the most suitable for this study as it supports real-time audio and full-motion video with a high level of security (Archibald et al 2019; Lobe et al. 2020). In addition to the contribution to the body of knowledge, this research also offers new methodological insights by testing a remote qualitative data collection approach in times of social distancing and travel restrictions with the help of online technologies such as zoom.

Qualitative research based on people’s personal stories requires trust, and therefore internet-based research could have been an obstacle to the creation of a personal relationship. The researcher, however, found that zoom interviews create an intimate space as most interviews with participants were from their homes with no interruptions or other distractions that public places sometimes entail. The circumstances of creating a

personal connection in a safe environment while maintaining physical distance, enabled many participants to open up about personal experiences, reflections and thoughts.

Studies have found that 'zoom' interviews are often more appealing for participants as people value the convenience, efficiency, security, interactivity, unique features (e.g., screen sharing, video record option) (Archibald et al. 2019). Using zoom as an online conference platform was indeed helpful as the programme allows one to record the video without disturbing the participants by placing an audio recorder next to them. This way the researcher could not only listen to the interview again but also watch participants' gestures and facial expressions which helped in transcribing and analysing people's responses. Another advantage of the zoom recordings was the good sound quality with limited background noises or other distractions, which was helpful for transcription purposes.

It is often stated that internet-based research is limiting, because it requires technical equipment and the knowledge to use it, which may be a concern (Lobe et al. 2020). The COVID-19 pandemic reinforced and expanded the use of digital mediums and the researcher found that many people in Germany were familiar with the zoom technology and had access to a computer with internet, and a webcam with microphone. It was, however, more difficult to recruit farmers and older people, who do not need and/or use computers in their daily life, which indicates that internet based research bears certain limitations in terms of participant recruitment.

3.4.1.2 Phase 1: Interviews with residents

In the first phase of data collection 24 interviews with urban and rural residents were conducted to explore and understand modes of nature connection and disconnection and its implications for pro-environmental behaviour and ecological wellbeing in both study locations.

3.4.1.2.1 Sample size and sampling strategy

Participants were selected according to the heterogeneity sampling technique, which is a non-probability sampling method to reflect the variability in the population. This technique is a type of purposive sampling that provides a diverse range of opinions, feelings, and interactions relevant to the research topic (Bryman 2016). Factors used to diversify the sample in both case studies were age, gender, occupation and educational background. Heterogeneity sampling was most useful for the chosen explorative case

study approach as this strategy enables the researcher to see how different people respond to nature in the two case study locations. Heterogeneity sampling provides multifaceted insights into human-nature connections by also including minorities and marginalised groups who might contradict the dominant discourse and “public opinion” (Fielding 2016 p.151). In this context, the nature connection and disconnection can be understood from a new perspective, which may contradict public opinion.

An invitation letter to participate in this study was advertised in the local newspapers as well as in community groups on social media. Further Email contact with local institutions, organizations and businesses was made to distribute the letter of invitation and find suitable participants. Furthermore, local shops such as cafes and bookshops were contacted and asked to distribute flyers. People, who responded to the advertisement were able to contact the researcher to arrange a zoom call.

Tables 3.1 and 3.2 show characteristics of respondents selected from the urban and rural case study areas. The samples included 12 male and female participants from each location within an age range between 19 to 67 years of age. Occupation is an important selection criterion as it shapes people’s lifestyle and hence influences interaction and contact with nature. Therefore, the sample included residents who: (a) work and depend financially on nature (e.g. a farmer or a shepherd), (b) as well as residents whose job did not involve nature directly or indirectly and thus rather encounter nature for leisure purposes. This selection ensured that respondents held different types of nature connections and disconnections. Respondents with various educational backgrounds were interviewed and they included basic educational qualifications, year 9, followed by year 10, year 13 (Abitur), as well as university qualifications, Bachelor, Master or PhD degree.

Table 3. 1: Sample of the residents from the rural case study Nottuln.

Rural Case Study: Nottuln					
	Coding name	Age	Gender	Occupation	Educational qualification
1.	Rural respondent 1	19	M	Student	Year 13
2.	Rural respondent 2	22	F	Employee at a court	Year 13
3.	Rural respondent 3	30	F	Employee at a hospital	Bachelor
4.	Rural respondent 4	31	M	Farmer	Year 9
5.	Rural respondent 5	32	M	Gamekeeper	Year 13
6.	Rural respondent 6	37	F	Employee at a bakery	Year 9
7.	Rural respondent 7	42	M	Soldier	Year 10
8.	Rural respondent 8	49	F	Self-employed, chiropody	Year 13
9.	Rural respondent 9	54	F	Housewife	Year 9
10.	Rural respondent 10	60	M	Self-employed, gardener	Year 13
11.	Rural respondent 11	62	F	Employee, social education	Master
12.	Rural respondent 12	66	M	Pensioner, former teacher	Master

It would be also interesting to compare nature connections and nature conservation behaviour among different generations as younger people are now growing up with more access to information and have a growing environmental concern about climate change and environmental degradation. Since younger people are most affected by climate change and environmental destruction, further research that investigates how this impacts people's feelings of nature connection and ecological behaviour would be valuable and interesting. Due to the small sample of the study, however, generational differences could not be investigated at depth but could be researched in another study.

Table 3. 2: Sample of the residents from the urban case study Paderborn.

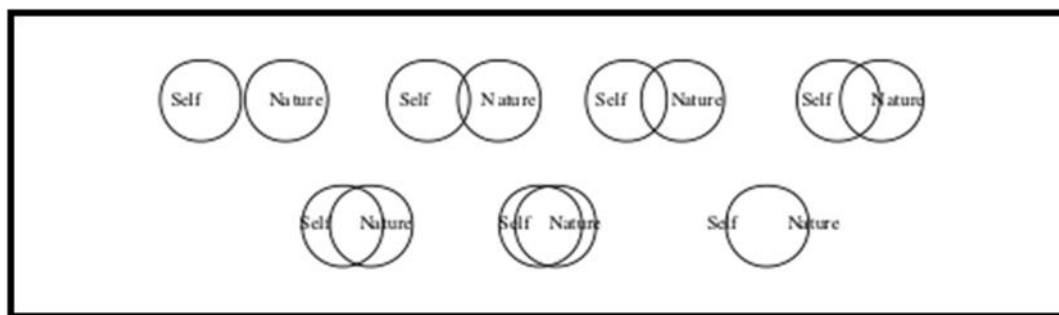
Urban Case Study: Paderborn					
Coding names		Age	Gender	Occupation	Educational qualification
1.	Urban respondent 1	24	M	PhD student	Master
2.	Urban respondent 2	25	F	Student	Bachelor
3.	Urban respondent 3	29	M	PhD student	Master
4.	Urban respondent 4	29	M	Entrepreneur, start-up	Master
5.	Urban respondent 5	33	F	Self-employed, photographer	Year 13
6.	Urban respondent 6	37	F	PhD student	Master
7.	Urban respondent 7	38	F	Self-employed, media host	Year 13
8.	Urban respondent 8	45	F	Employee, Institute	Year 13
9.	Urban respondent 9	49	M	Management and Research,	PhD
10.	Urban respondent 10	52	M	Lecturer, editor creative artist	Master
11.	Urban respondent 11	55	M	Shepherd	Year 9
12.	Urban respondent 12	67	F	Pensioner, social worker	Year 13

3.4.1.2.2 Interview guide and question design

There are three different ways to conduct interviews, structured, semi-structured and unstructured (Bryman 2016). For the resident interviews, a semi-structured interview guide was most suitable for a broad range of people with different backgrounds and relationships with nature. The advantage of semi-structured interviews is that the researcher can react to people's responses with more flexibility for deeper exploration of topics that may arise throughout the interview process than in a structured interview (Gray 2009). An interview guide (see Appendix B) with predetermined topics on the other hand ensures a clear focus on the research questions and generates a comparable set of data. The interview topics based on the literature were modelled around the research questions of this study. Specifically, questions were based on Ives et al. (2017) different types of nature connections to address inner and outer forms such as material, experiential, cognitive, emotional and philosophical/spiritual connections.

Ives et al. (2017) in a multidisciplinary review on human-nature connections identified that integration of complementary perspectives on human-nature connection was missing. Questions thus explored nature connection as a state of mind, as an experience and as a place. Most questions were open-ended. This was important for detecting aspects that were relevant for the participant’s relationship with nature. Question often started more generally for example by asking what nature connection or pro-environmental behaviour meant to respondents. This was followed by more specific questions to understand how those terms translated into their daily life. Other questions sought to document where respondents grew up, how much time they spent per week in nature, or how emotionally connected that they perceived themselves to be with nature. To establish a point of comparison, all respondents were asked to describe their emotional connection as a number from 1 (very low) to 7 (very high). Moreover, Schultz’s Inclusion-of Nature into Self-Scale was shown on the screen (refer Figure 3.2), so respondents could choose a symbol that best described their closeness with nature best.

Figure 3. 2: Inclusion of Nature into Self-Scale.



Source: Schultz (2002).

Further, the researcher asked if COVID-19 had impacted respondent’s relationship with nature as observations made in Australia suggested that this may be the case. On the one hand, the researcher noticed an increased appreciation for nature among people she talked to, while statistical numbers also showed evidence of this trend. As an example, rangers from South Australia reported a 30 percent increase in visitor numbers to Brownhill Creek in Adelaide since COVID-19 restrictions began (Sutton 2020). As Germany had more severe lockdown measures throughout most of 2020 and 2021, this observation was assumed to be similar there.

3.4.1.3 Phase 2: Interviews with practitioners

In the second phase of data collection, 10 interviews with practitioners were conducted to gather opinions from experts, local authorities and stakeholders. These interviews enabled the documentation of an external perspective on respondent's nature connections and disconnections from professionals in the field. The interviews further provided background information and context for both case study locations regarding city developments and relevant policies currently in place.

3.4.1.3.1 Sample size and sampling strategy

Relevant practitioners were identified as people who live and/or work in one of the case study locations and are (a) decision makers, (b) stakeholders, or (c) experts within the field of the human-nature relationship. Local authorities and Universities from both case study areas were contacted via Email with a letter of invitation to participate in this study. Displayed in Table 3.3 the sample included local politicians, whose area of responsibility incorporated the environment, climate and mobility. Moreover, interviews were undertaken with local authorities such as representatives from urban planning, the department for environmental protection and green space, the department for nature and landscape conservation, and the forestry office. A scholar from the department of landscape ecology and ecological planning in Muenster with research expertise in the human-nature relationship was consulted. These practitioners were relevant, since they worked professionally in the field and were in regular contact with urban and rural residents in both case study locations. Therefore, these people had great knowledge and expertise in the field of the human-nature relations and could provide interesting insights about the residents' nature connection and disconnection in both locations.

Table 3. 3: Sample of the practitioners from both case study locations.

Rural Area: Nottuln	Urban Area: Paderborn
<p>Rural practitioner 1</p> <ul style="list-style-type: none"> ➤ Local politician, conservative party, green party 	<p>Urban practitioner 1</p> <ul style="list-style-type: none"> ➤ Local politician, conservative party, green party
<p>Rural practitioner 2</p> <ul style="list-style-type: none"> ➤ Local politician, Committee for mobility, conservative party 	<p>Urban practitioner 2</p> <ul style="list-style-type: none"> ➤ Local politician, Green party
<p>Rural practitioner 3</p> <ul style="list-style-type: none"> ➤ Representative of Forestry Office 	<p>Urban practitioner 3</p> <ul style="list-style-type: none"> ➤ Local politician, Committee for environment, climate and mobility, Green party
<p>Rural practitioner 4</p> <ul style="list-style-type: none"> ➤ Representative of department for environmental protection – Nature and Landscape conservation 	<p>Urban practitioner 4</p> <ul style="list-style-type: none"> ➤ Representative of Urban planning, Paderborn City
<p>Rural practitioner 5</p> <ul style="list-style-type: none"> ➤ Scholar from the University of Muenster: landscape ecology and ecological planning 	<p>Urban practitioner 5</p> <ul style="list-style-type: none"> ➤ Representative of department for environmental protection and green space, Paderborn District

3.4.1.3.2 Interview guide and question design

As the representatives had different functions and areas of responsibility an unstructured interview approach was chosen as most suitable. In unstructured interviews, neither the questions nor the answers are predetermined (Minichiello et al. 1990), but the researcher has a conversation with the participants and “generates questions in response to the interviewees’ narration” (Zhang & Wildemuth 2017, p. 240). As this study uses an interpretative research paradigm and hence assumes that reality is socially constructed, this approach allows us to understand a phenomenon in depth within its cultural context without imposing too many predetermined assumptions. As there is no research on how different practitioners in Germany understand and perceive the human-nature

relationship, this explorative approach was well suited and enabled an understanding of modes of nature connection and disconnection among different practitioner groups. Relevant data obtained included background information on both case study locations, such as the political agenda and nature's role in it, but also various opinions and experiences within the field of the human-nature relationship.

The advantage of this broad exploration of unstructured interviews is that unanticipated themes will be discovered (Zhang & Wildemuth 2017). Being exposed to new aspects within the human-nature relationship in Germany enhanced the understanding gained from the resident interviews and complemented the knowledge about both case study locations. Although unstructured interviews limit the control the researcher has over the conversation, s/he can still encourage participants to relate to experiences and perspectives that are of relevance for the research by preparing a loose agenda, or aide memoire to be addressed (Burgess 1984; Minichiello et al. 1990; McCann and Clark 2005). The outline for the unstructured interviews for practitioners included questions about: (a) their job position and in what broader sense that related to nature. (b) their human-nature relationship and what they had experienced within their profession. (c) their reflections on modes of nature connections and disconnections in the case study location. (d) and the topic of COVID-19 and how that had impacted their work as well as the human-nature relationship in the case study area. I information on environmental protection and sustainability, to also include rules and regulations in place, such as the EU Convention on Biodiversity or the Paris Agreement.

3.4.2 Document reviews

The study included an assessment of running records, described as publicly available documents of a society such as voting records, policy documents, the city budget, communication or media records (Webb et al. 1966). This also includes maps, (environmental) policies, as well as rules and regulations for urban planning and city development of both case study locations. By reviewing Germany's conservation standards, the researcher obtained an understanding of how people are able to interact with nature and environmental management in Germany. This is relevant as the physical geography frames the setting and shapes the way people are able to interact and engage with nature in urban and rural areas. Respondents were asked to provide pictures of nature they encounter in both case studies locations. These pictures are shown in the introduction and result chapters to show urban and rural nature in both case study areas

and to visualize respondents' statements about their relationship with nature. Examining the place-determined opportunities to interact and engage with nature provided a better understanding of how quality, quantity and access to nature in Germany affect and shape nature connection and disconnection. These documents assisted me to embed the primary interview data into a place-based context and provide an in-depth understanding of the human-nature relationship on the ground. They can also be used to identify barriers and discuss the effectiveness of conservation and nature management in place and to formulate place specific recommendations for improving modes of nature connections.

3.4.3 Data analysis techniques

In alignment with my research design, a qualitative data analysis technique was used to analyse data gathered through the methods described in the previous section. First it was necessary to transcribe and translate data from the German language into English. This task enabled the researcher to become familiar with the data at an early stage (Gray 2009).

The primary data derived from the resident interviews were then analysed with the help of a thematic content analysis, which is one of the most common techniques for qualitative data analysis (Gray 2009; Bryman 2016). This means, transcripts are systematically and objectively categorised by establishing and identifying characteristics, classes and categories guided by the research questions and based on the literature. The software NVIVO supported the data analysis process.

An important category was urban and rural respondents' description and perception of nature connection. Therefore, the theme of nature connection divided rural and urban respondents for comparative analysis. New themes formed specifying whether certain descriptions were external or internal factors that intensified or decreased residents' perception of nature connection. Within this process, Ives et al. (2018) forms of human-nature connections set a point of reference for how to categorize modes of inner and outer nature connections. Moreover, other themes formed based on the research questions that investigated the implications of nature connection and disconnection for environmental behaviour and wellbeing. Other subcategories identified COVID-19 related implications and changes within respondents' relationship with nature.

In a similar way, a thematic analysis was conducted for the data analysis from the interviews with practitioners. Themes that re-occurred throughout the interviews about

nature connections and disconnection in the urban and rural area were established and compared. Schuttler et al.'s (2018) model, for example, on the factors that contribute to the alienation and separation from nature were taken as themes to compare and classify the factors of urbanisation and urban lifestyle on the human-nature relationship, such as emotional connection, time spent in nature, access to nature, knowledge etc. Established categories and themes were “repeatedly evaluated against the data and modified if necessary” (Gray 2009 p.500).

3.4.4 Limitations

The main limitation of this research project is that it is not possible to generalise findings to the wider community as they only provide trends that can be considered in a broader sense that relate to the small number of respondents interviewed in this study. As Yin (2009) states, case studies offer theoretical propositions rather than statistical generalisations. Due to the small case numbers, the comparison between the urban and rural area in North Rhine-Westphalia cannot act as a representative example that can be generalised elsewhere or define how nature connection and disconnection generally manifests in rural and urban areas in Germany. In fact, findings from this study only provide trends specific to the respondents in both places. However, they are important in providing helpful information to better understand and investigate the human-nature relationship in common living areas in North Rhine-Westphalia. Findings may act as a starting point to design future studies that can investigate and follow up those insights in more detail and on a broader scale.

Further, the small selection of participants from both case study locations entails a potential bias and cannot act as representative example to show how people in rural or urban places connect or disconnect from nature in Germany. As this was a qualitative case study research, the small number of participants did not allow one to investigate how differences in religions, social-demographical structures, education, and income may impact how people establish a relationship with nature. In fact, most of the respondents from the urban area have a high educational background, which may affect their relationship with nature. Despite the lack of representativeness, a qualitative case study research is nonetheless valuable to gain a deeper and complex understanding of human nature connections and disconnections in two places. These insights can provide helpful information for further investigations.

Another main limitation of this project was that it occurred during the COVID-19 pandemic and thus had to be flexible and find ways of doing the research within the bounds of the restrictions that were in place. This PhD research commenced in March 2019 with fieldwork for data collection planned in Germany for six months starting from June 2020. Due to the outbreak of the COVID-19 pandemic and the measures implemented in response to significant border closures, the methodological approach was modified considerably to meet global circumstances. International travel restrictions and social distancing rules affected the participant recruitment processes and the qualitative data collection approach. Participant recruitment in Germany and the interviews conducted via the online service 'zoom', all had to be undertaken from Australia. Due to the remoteness of data collection from abroad, participant observations were impossible, and a greater focus was thus placed on personal interviews with urban and rural respondents, as well as with practitioners from both case study locations.

The online platform zoom, however, has its limitations. The initial idea to test the field with focus group discussions was abandoned as natural interactions and discussions between residents were found to be too limiting and unnatural through zoom. It was also more difficult to recruit participants as people were more sceptical about an online interview with an unknown researcher. It was particularly challenging to recruit participants, who were less familiar and comfortable with such technology, such as farmers and older people. Recruiting a representative sample is hence difficult with online interviews as they tend to be biased towards (younger) people, who are more familiar with computers and online interviews as they have grown up with them and are likely to use them in their professional/personal life. Online interviews may also increase the rate of dropout. The researcher found that some people were less committed to show up and participate despite their initial interest. A few times, respondents who contacted the researcher and wanted to participate did not log into the zoom meeting at the set time, and the period of data collection had to be extended.

As the researcher could not travel to Germany, a decisive factor for selecting urban and rural case study locations was their suitability for a remote study. The familiarity of the researcher with the physical geography of the village/city, but also the natural surroundings of both places was important. This, however, considerably limited the options for case study locations and excluded a more contrasting comparison such as comparing modes of nature connections and disconnections in the metropolis of Berlin and a remote village in Bavaria. It was an advantage that the researcher had lived in both

places and had pre-existing knowledge. Therefore, Paderborn and Nottuln in North Rhine-Westphalia chosen for convenience, to some extent shaped and limited the comparison between urban and rural residents.

3.5 My position as a researcher

Within the context of writing this thesis and collecting qualitative data in Germany the personal position of the researcher is of importance. As Hall (2004 p.149) states

...one also cannot ignore the personal...the personal subjectivities of our experiences are vital to our choice of research paths.

By conducting research in the researcher's home country and in communities familiar to her, this research has characteristics of inside research. Inside research is the study of one's own social group and society (Greene 2014). Loxley and Seery (2008) argue that it is undertaken by a member of the same group who share characteristics, such as nationality, occupation or biological similarities. This membership implies that the researcher possesses pre-existing knowledge of the community and its members before starting the research process (Merton 1972; Bell 2005). This is considered to be an advantage as participants are often more open and trusting when discussing a topic with someone 'who understands' (Bell 2005).

Regarding the challenge of recruiting participants and conducting interviews from Australia, pre-existing knowledge about local businesses, community groups and institutions was fundamental. The researcher did not know the participants before to avoid bias. As the researcher has lived in both places this provided her with an understanding of both case study locations without having to visit them during the data collection period. Being able to speak German was particularly helpful for conducting online interviews with zoom as people were more open and willing to talk to a researcher without disturbances such as language or cultural barriers. Although most people in Germany have a basic knowledge of English, responding in a second language would have restricted most participants' natural range of communication and expression considerably.

Lastly, it is important to mention and acknowledge that the researcher comes from a Western background and hence applies a Western outlook of nature and the human-nature relationship.

3.6 Summary

This chapter has outlined the methodology that was applied to investigate how different places, one rural and one urban, can shape and influence the human-nature relationship in Germany and what implications those modes of nature connection and disconnection possibly have for environmental behaviour and ecological wellbeing. The chapter started with the philosophical stance of the study. Subsequently, the qualitative research design was outlined as well as different data collection methods and analysis techniques. The chapter concluded with its limitations and the researcher's positionality.

4 NATURE CONNECTIONS

4.1 Introduction

This chapter presents the thematic analysis around modes of nature connection in the urban and rural case study location. It is based on data obtained from qualitative interviews undertaken with respondents from September 2020 to March 2021. Data used in the first section is mainly based on interviews conducted with urban and rural respondents focusses on nature connections. It starts with a general overview and comparison of rural and urban respondents' relationship with nature.

4.2 Overview of urban and rural resident relationship with nature

Highlights

- Findings demonstrate that where people live was less important for emotional connection with nature.
- Nature connection was a positive value that all respondents identified with.
- Where people live, however, was still definitive for how much time they spent in nature; on average, rural respondents spent more time in nature than urban ones and were more likely to have an occupation that involved nature.
- Respondents felt where they lived at any one time was fluid and dependent on their life stage.

In comparing respondents' relationship with nature between urban and rural areas, findings show that nature connection is a positive social value; one that all respondents identified with. All respondents from Paderborn and Nottuln stated that they have a (close) relationship with nature and that nature was (very) important to them regardless of whether they lived in an urban or rural context.

Although nature connection is subjective and a perception, respondents from both locations defined nature connection in a similar way and explained why they identify as such, which is presented in more detail in the following section. Fundamental factors, which characterised respondents' nature connection were: (i) the importance of nature for

their lives; (ii) to enjoy spending time in nature, (iii) to feel an emotional bond and/or love for nature, (iv) to be mindful and attentive of nature, (v) to feel concerned about the environment, and (vi) to be able to perceive nature's healing forces. For a few respondents, particularly those who worked with nature, they also identified (vii) their commitment to care for nature and to spend most of their life in nature as a mode of nature connection.

A high 91 percent of rural and 83 percent of urban respondents thought of themselves as connected to nature because they considered nature as essential and important for them: A 38-year-old woman from Paderborn for example explained:

I would describe myself connected to nature because I can't live without nature. Nature is really important to me, on so many levels...Being able to go for walks in nature, having a garden, watching the birds fly by, observing the seasons. Nature is everything. How poor would my life be without it?

(Urban respondent 7, female, 38)

The importance of nature varied among respondents. For some people having a life without nature was unthinkable, other stated they perceived themselves as connected to nature but were not obsessed with it, as this 22-year-old woman from Nottuln explained:

I consider myself as connected to nature because nature is important to me. I know some people are really crazy about nature...like these eco-freaks, who walk barefoot and all this. That's not me, but that does not make me less connected with nature.

(Rural respondent 2, female, 22)

The majority of urban and rural respondents enjoyed being in nature and liked spending time outside which was another indicator that characterised the degree of nature connection. A 49-year-old businessman from Paderborn for example, considered himself as connected to nature because he longed for nature and felt incomplete if he was unable to do so.

I know how connected I am with nature as I really enjoy spending time in nature. I love going for hikes, or runs, to sitting in the sun or take my canoe to go for a paddle. When I have not been outside, I sometimes feel restless and then I know what I need. Unfortunately, my life not always allows me to do be more often in nature.

(Urban respondent 9, male, 49)

Another 37-year-old woman from Nottuln explained that she walks her dogs every morning. As she has three kids, this is the only time she has for herself, which she chooses to spend in nature. For her, this demonstrates her connection with nature.

Every day I am in nature for at least one hour in the early morning as I walk our dogs, regardless the weather. I enjoy it so much and it such a nice way to start my day. When my kids wake up it gets a bit hectic, so I really enjoy the quiet time for myself. Of course, I could also choose to sleep longer but the fact that I rather spend my time in nature shows my connection.

(Rural respondent 6, female, 37)

All respondents from both case study locations also characterised nature connection as an emotional bond and/or love and interest for nature. The fact that respondents liked and even loved nature was fundamental and underpinned their nature connection.

A 29-year-old man from Paderborn for example described his connection with nature as a constant love he feels for nature regardless of external circumstances:

I can best describe my connection with nature through this unconditional love that I feel towards nature. I don't mind if it rains or if its winter or autumn and everything is grey. Nature is always beautiful to me regardless the circumstances. I always feel this bond with nature that connects me on a very fundamental level with nature.

(Urban respondent 4, male, 29)

A 49-year-old woman from Nottuln also described herself as connected with nature because nature 'responds' to her love. She explained that plants start to flourish when she looks after them, which she takes as an indicator of her nature connection.

I sometimes talk to my plants. So often friends give me plants, which they have neglected, and which are nearly dead. I give them fresh soil and let them recover in my garden. It sounds silly but I think they grow and get better because I talk to them. My husband always laughs about me, but I don't care. I think they feel my love for them, and they survive.

(Rural respondent 8, female, 49)

For a gardener from Nottuln, his bond and nature connection manifests in acting in alignment with nature and adjusting his routine to the rhythms of nature. As his occupation has taught him about the rhythms and cycles of nature, his bodily clock has internalised those rhythms and the season, so he rests and rises with nature.

My nature connection is a participation in the natural cycle that has been established through my bond with nature. I wake up with the sun in summer but in winter I also feel sleepy and take more time to rest and recover. This bond was not always there, but because of my occupation I had to align my lifestyle with nature and this has established this close connection.

(Rural respondent 10, male, 60)

Nature connection was also identified by 75 percent of rural and 90 percent of urban respondents as their sensitivity to receive nature's healing effects. Feeling better after

spending time in nature demonstrated respondent's nature connection (there is more on wellbeing in chapter 6).

As a 30-year-old woman from Nottuln explained:

I think my nature connection is best described by the sensitivity I feel towards nature. I know how closely connected I am with nature because I feel so well when I am in nature. I am not sure if many people are able to feel the healing effects of nature. That teaches me how close I am with nature.

(Rural respondent 3, female, 30)

Another woman from Paderborn aged 45, who has recently lost her husband stated that it is nature that can consolidate her, which makes her feel connected and loved.

I can feel how much nature means to me when I experience how nature consolidates me. No other 'distraction' has such a power over my mood and after the funeral of my husband all I wanted to do was to go for walks in nature. And simply walk and walk and walk and never stop. To forget everything and just be in nature. Alone. That clearly showed me what is truly important and beneficial for me and how connected I am with the natural world.

(Urban respondent 8, female, 45)

The majority of rural and urban respondents also mentioned that they feel concerned about nature and that environmental destruction upsets them (see section 6.3.1). Feeling for nature and worrying about environmental health was hence also part of respondent's nature connection.

A 38-year-old woman from Paderborn stated how sad she felt to see a forest close to Paderborn being destroyed by a bark beetle plague. This sadness and concern she described also characterised her nature connection.

Being connected to nature also means to me to care about what is happens on our planet: What happens to the animals, to the forests, to our climate. It hurts me to see when trees around my neighbourhood are cut down... or when I go into the forest next to Paderborn and see the destruction that the bark beetle has done. Last year, I went into a forest a bit outside of Paderborn where I have not been for a while and was devastated to see that everything has changed. Most of the trees were gone or cut down and made me cry.

(Urban respondent 7, female 38)

Another 62-year-old woman from Nottuln described how her concern for nature impacted her personal life as the state of the environment made her question her wish for children. Her sense of nature connection hence manifested as a strong concern that made her reconsider having kids for the sake of the child but also for the sake of nature.

I am so concerned about the environment and nature because I care. Before I had my daughter, I was unsure about whether it is actually responsible to have children anymore. For the child but also for nature; we are enough people on this planet... That was such difficult decision and of course I am so glad that I have had my children. My daughter is 31 years old now and she also wants to have kids. Last time we spoke I had to express my concern to have children considering the current state of the environment. It got so much worse...But of course, I understand her wish and don't want to influence her in that personal choice.

(Rural respondent 11, female, 62)

Other respondents, particularly those who worked with nature expressed their nature connection rather as a form of caring and as a commitment and choice to an occupation with that dealt with nature. 33 percent of rural and 17 percent of urban respondents stated that looking after 'nature', and caring for farm animals, wildlife, flowers or pieces of land every day and throughout all conditions expresses their love and connection with nature.

A 31-year-old farmer from Nottuln for example explained:

I am connected with nature as I am in nature every day and chose to do so. I can't imagine doing anything else even though it is a tough job and a lot of hard work. But the fact that I am looking after my lands, plant and harvest regardless shows my commitment and my love for nature.

(Rural respondent 4, male, 31)

A migrant shepherd from Paderborn aged 55 also described how his nature connection manifests through his job as he has always loved working with sheep and looking after them. His nature connection, he explained enables him to endure the hardship that his occupation brings.

Many people think I walk around in nature and that its such pleasant job. People have no idea because it is so tough. Often my feet hurt and I am glad when I am back home and can finally rest. But from a young age I was always interested in nature and loved working with sheep, looking after them, sheering them and so on. When I sell my sheep for meat production people think I am cruel and don't love nature. But I do, I love nature and that is why I am doing what I do.

(Urban respondent 11, male, 55)

Considering rural and urban respondents' factors that made them feel connected to nature, findings demonstrate that there was little difference found between rural and urban respondents' perception of nature connection.

To better understand and compare urban and rural respondents' perception of nature connection, they were asked to quantify three aspects of their relationship with nature. The first dimension was their emotional bond and love for nature. As every respondent

stated to like and/or love nature they were asked to express this in the form of a number from one (least) to seven (most). The average for rural respondents' *emotional connection* with nature was 5.5, and 6.0 for urban respondents. Subsequently, Schultz's inclusion-of nature into self-scale was presented to respondents on the screen and they were asked to pick a symbol that best described how interconnected they perceive themselves to be with nature. The scale measures people's interconnection with nature by the extent by which people include nature into their own identity. The average response for how *interconnected* rural and urban respondents felt with nature was 4.6 for rural respondents, and 5.3 for urban ones. Respondents stated that they feel close with nature but still have a life rather separated from it. Therefore, the majority of people chose symbol four or five.

A 42-year-old man from Nottuln for example explained why he could not fully identify as one with nature:

I chose number four. I think it is wrong to say we are one with nature because we live in houses and are rather separated from nature. But of course, there are areas of contact and overlaps where I feel interconnected with nature, especially when I go camping with my kids and we are outside all day long.

(Rural respondent 7, male, 42)

Another 62-year-old woman from Nottuln explained her choice:

I think five describes best how interconnected I feel with nature, I wish it was more but we don't live like indigenous people anymore. I clearly feel my own self-identity as an individual person and cannot say I am fully nature. But there are so many fundamental parts that I share with nature. Therefore, I chose number five.

(Rural respondent 11, female, 62)

Lastly, respondents were asked how much they knew about nature and how they estimated their cognitive understanding about nature and natural processes. *Knowledge* about nature was broadly defined as an ecological understanding. The average response for rural respondents was 4.4, and 4.3 for urban ones. Unless respondents worked with nature, urban as well as rural respondents felt less confident in their knowledge about nature especially regarding local flora and fauna. Urban and rural respondents stated that they felt they had a general understanding of nature rather than specific knowledge about the local environment, as most respondents declared their knowledge about local nature as very basic. A 35-year-old woman from Paderborn for example stated:

I am not sure...Of course, I know some basic principles, the things you learn at school. How photosynthesis works and things like that. But to be honest, most of

the things I have forgotten since I have never used them again. I think I therefore would rather choose a 3 or 4 for my knowledge about nature.

(Urban respondent 5, female, 35)

Another 24-year-old man from Paderborn explained that he had a broad ecological understanding but admits that he has little knowledge about the local environment since it seems rather boring to him:

Unfortunately, I know very little about nature here in and around Paderborn. I like watching nature documentaries and learn about nature but most of them show the Amazonia rain forest or talk about other areas further away. Therefore, my knowledge about nature in Germany is very limited. I also have to admit that I am not very interested either.

(Urban respondent 1, male, 24)

A 54-year-old housewife from Nottuln said that although she would not consider herself knowledgeable regarding a scientific understanding of nature, she felt familiar with local plants and knows how to cook and process them into food. She explained:

My knowledge about nature can be better for sure. I think that is a general problem that people know very little about nature. I sometimes see parents, who start screaming when their kids eat a daisy or dandelion. They don't know that you can eat these plants, they are healthy and you can make a nice salad out of them. My parents have taught me all these things and I try to teach them to my children too.

(Rural respondent 9, female, 54)

Overall, these results demonstrate that for the urban as well as rural respondents', connection with nature is dominated by an emotional component rather than feeling integrated into nature or having specific knowledge about it. Unless they worked with nature, urban as well as rural respondents felt less confident in their knowledge about nature especially regarding local flora and fauna. By comparison, almost 70 percent of all respondents gave themselves a 6 or 7 for their emotional connection with nature and explained they deeply love nature. Given the similarity between both case study results, it appears that where people live is less definitive for people's connection to nature. In fact, the analysis shows that the urban respondents felt slightly more integrated and emotionally connected to nature than rural respondents, despite the fact that urban respondents spent less time in nature.

On average, rural respondents spent around 21.5 hours per week in nature in contrast to urban respondents, who only spent 13.3 hours. This big difference between urban and rural was because three people in Nottuln had an occupation that involved nature and only one did so in Paderborn. These people reported they spend on average 40-50 hours

per week in nature. Without these respondents, the average time for rural respondents was 15 hours and 8.5 hours for urban ones. In this case, the rural respondents had more exposure to nature than the urban ones, which might be due to the natural surrounding that was easier accessible in Nottuln than in Paderborn.

Respondents from the rural areas tended to be following an urban lifestyle 66 percent of them had an occupation in the service sector, and had no link to nature or with primary production. This is unsurprising, as statistics show that only 3.2 percent of all residents in Nottuln are still working in fishery, forestry or agricultural sectors. In Germany, this number is even lower as less than 1 percent of the population are employed in primary industries (Statistische Bundesamt 2019). According to the World Bank (2021), this percentage is one of the lowest worldwide and has significantly decreased since 1950, at which time 25 percent of all citizens worked in the primary sector. With less people working with nature even in rural areas there is a possible risk of separation and alienation from nature. Therefore, disconnection is not only fuelled by growing urbanisation, but also by the fact that people's occupations rarely involve nature. The fact that residential knowledge about local nature was low is also not surprising given most people's livelihood is not affected and shaped by nature anymore. Taking care of nature e.g. by having a garden or engaging in other environmental projects, could be construed as a hobby but not a necessity for more than 80 percent of all respondents.

It appears that residential connections with nature are predominantly occurring during recreational interactions, given that 90 percent of respondents mentioned: (1) aspects of nature's beauty such as beautiful landscapes, locations, or nice objects such as flowers or trees, as well as (2) feelings they received from nature that contributed to psychological and/or physical wellbeing as things they highly valued about nature.

A 32-year-old male from Nottuln for example explained:

I value nature most for the way it makes me feel; the psychological effects it has on me. I don't know anything that is comparable.

(Urban respondent 5, male, 32)

Another 52-year-old man from Paderborn valued nature's beauty in spring and said:

For me, the best part about nature is when spring comes and everything is covered with flowers. That's what I value most about nature, its beauty.

(Urban respondent 10, male, 52)

Other respondents valued the feelings they received from being in nature such a feeling of consolidation, freedom, peacefulness, serenity, infinity, love and belonging. As a 37-year-old woman from Paderborn stated:

When I look over the fields when I go for a walk, I feel free...That am so grateful that nature makes me feel this way.

(Urban respondent 6, female, 37)

Other pleasant aspects respondents valued were nature's quietness, to connect with their body, to breathe fresh air, to feel the sunshine and to embrace the smells of nature.

Around 80 percent of all respondents (75 percent in the urban and 92 percent in the rural) grew up in a rural area and experienced their childhood in a small or larger sized village. Only 17 percent of all respondents (25 percent of urban and 8 percent of rural respondents) grew up in a city. However, they still reported they had a lot of exposure to nature, for instance through community gardens (german: "Schrebergarten"), vacations, and time spent in rural places such as their grandparents' home.

A 37-year-old female resident from Paderborn for example stated:

I grew up here in Paderborn city but I spend most of my weekends and holidays in the countryside with my grandparents. They have a big garden, and their property was surrounded by fields and forests. That was such a beautiful time for me...my grandparents had so much time to play with me and my siblings in the garden.

(Urban respondent 6, female, 37)

Apart from growing up in rural areas, almost 90 percent of all respondents reported they had lived in both rural and urban regions at some point in their life. Even the youngest, a 19-year-old male (rural respondent 1), had grown up in an urban area and moved to Nottuln when he was 13 as his parents took up a job opportunity in a city nearby.

This high mobility and interchangeability of urban and rural living space displayed in both case study locations, may suggests that people live interchangeably between rural and urban spaces depending on people's life stage and situation. The fact that most respondents grew up in a rural area and moved to urban areas for educational or job purposes throughout their life further indicates that people's living environment may not be static anymore. This could be the reason why people's emotional connection, integration and knowledge about nature was similar in both the rural and urban case study location. My findings hence suggests that where people live is less definitive than previously supposed in relation to their connection to nature, at least in both case study locations in North Rhine-Westphalia.

4.3 Internal and external factors of nature connection

This section presents in more detail how urban and rural respondents experience nature connection and how internal and external factors shape those.

Highlights

- Respondents from both case studies had similar themes in their description and experience of nature connection.
- Mindfulness and attention are influential internal factors that shape and increase urban as well as rural respondents' perception of nature connection.
- Familiarity and knowledge about nature as well as place attachment increases people's perception of nature connection and were more dominant and relevant for rural respondents, particularly those who worked with nature.
- Meeting other people in nature distracts and disturbs respondents' perception of nature connection.
- Positive childhood experiences in nature are a key driver for nature connection.
- Results demonstrate that people's relationship with nature is a dynamic and evolving process that transforms and changes throughout their life.
- Transformative experiences with nature were a significant influence in relation to encouraging people to actively care for nature by evoking a sense of responsibility.
- Transformative nature connections/experiences partly shaped by gender and the remoteness/diversity of the landscape.

4.3.1 Mindfulness, attention and awareness

Analysis showed that whether in the rural or urban case study area, respondents articulated similar themes when describing their experience of nature connection. Data showed that mindfulness and attention for nature was integral to the capacity to create a deeper sense of nature connection for both respondent groups. Beyond a positive attitude towards nature and enjoying spending time in it, 83 percent of urban and 58 percent of rural respondents identified mindfulness and being present in nature as an essential component of their relationship with nature that intensified their feeling of connection. As a 38-year-old woman from Paderborn for example explained:

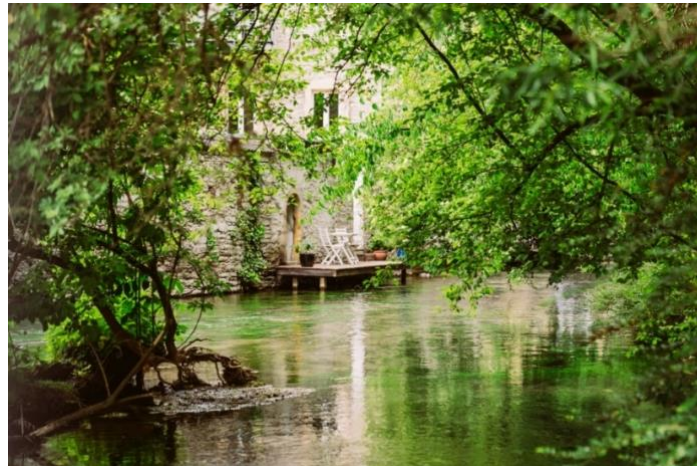
For me being connected to nature means to be mindful. To be present and to not be distracted by other things. Last summer I went for a multiday hike and this slow way of travelling intensified my perception of nature connection. As I walked slowly I had the time to look at everything, to be present with me and nature and with whatever came along. Sometimes it rained, sometimes it was sunny but I always stayed in the present moment because that was all that mattered.

(Urban respondent 7, female, 38)

Another 35-year-old woman from Paderborn described how “smelling nature, feeling the air, the wind and experiencing nature with all your senses”, establishes her feeling of connection and encourages her “to just *be* in nature” (urban respondent 5).

Taking pictures of nature, she stated, increased her appreciation and attention for nature, which intensified her feelings of nature connection in Paderborn (refer Plate 4.1).

Plate 4. 1: A terrace on the Paderriver in Paderborn city.



Source: © urban respondent 5

In a similar way, a 54-year-old rural resident explained how her close observations of the seasons changed her perception and relationship with nature. For her, she explained how her feelings connected to nature based on the fact said:

That you took the time and observed nature closely. You should hear, observe, feel, taste... and then you recognize and understand what nature is.

(Rural respondent 9, female, 54)

Being mindful in nature was found to increase respondents' appreciation and gratitude for nature and enhanced their feeling of nature connection. A 32-year-old man from Nottuln, for example, stated that when he is mindful, he is connected to nature. He then notices all the hidden details that make the nature experience so special. He explained:

Sometimes when I go into the forest I just observe and try to not think about anything else. In the beginning it always takes a little time until my mind stops. It helps to have my phone in silent mode to not be distracted. When I am mindful I can notice things, I did not see before such as a fox hiding in the scrubs or a bird's nest in the trees. These little details make me very happy but without paying attention and being mindful I would not see them. It is as like a secret world that you can experience once you slow down and are open to receive.

(Rural respondent 5, male, 32)

The fact that more than 70 percent of respondents mentioned mindfulness, appreciation and gratitude as essential components that intensified their bond with nature emphasises that respondents from both living environments are open and receptive of nature and deliberately pay attention to it. The fact that more urban respondents (83 percent of urban in comparison to 58 of rural respondents) mentioned mindfulness and/or paying attention as an essential part of their nature connection is a result of urban respondents experiencing the absence of nature more frequently as they live in a city. Experiencing the absence of nature may then increase respondents' appreciation and attention for nature.

A 30-year-old female resident from Nottuln, for example, stated that the experience of feeling the absence of nature while living in a city has increased her appreciation and attention for nature; as it reminded her she had missed her close bond with nature. In this instance, an absence of nature had also created an increased awareness of its importance and encouraged her to move back to the countryside. She said:

I think I experienced how connected I am with nature when I moved to the city...Now that I have moved permanently back to Nottuln I have realized how important nature is for me. My sister, for instance, has always lived here but does not perceive and appreciate nature as much as I do... she does not know how lucky she is being surrounded by nature, maybe she will get there later in her life, I knows...

(Rural respondent 3, female, 30)

Not only does an urban area restrict the experience of nature, but also the continuous COVID-19 pandemic lockdowns in both case study locations limited respondents' time and space to connect with nature. Although people were not allowed to go outside for more than one hour, 90 percent of urban as well as rural respondents reported an increase in appreciation and attention for nature as they became aware of the importance of nature for them (refer Chapter 6).

A 29-year-old urban resident, for example, explained how grateful he was for being able to go for his daily walks in the parklands in Paderborn. His appreciation and attention for nature significantly increased due to the COVID-19. He said:

Having suddenly a limit on how much time you are allowed to be outside changed my perception towards nature. Now, I pay a lot more attention to nature here in Paderborn and am grateful that we actually have so many nice areas close by. These little walks were the highlights of my day!

(Urban respondent 3, male, 29)

Physical separation and limited access to nature are not always found to be contra beneficial for the human-nature relationship but can also remind people of their close bond with nature.

Vacations and work placements abroad for example, also reminded respondents of their close connection and bond with nature in Germany. 25 percent of all respondents reflected, that travel to other countries had made them more aware of their love and attachment to the lush and green vegetation of Germany with its thick beech forests.

A male aged 42 from Nottuln, for example, who regularly works as a soldier in Afghanistan, described how his appreciation of nature in Germany had increased due to having to spent long periods abroad in a country dominated by deserts. He said:

Because I've been stationed in Afghanistan for so long, I've learned to appreciate the green and lush vegetation of Germany in a new and different way. And that's what I mean, when I say I connect with nature when I go outside for a walk or run in the forest – being connected with nature is that feeling of being present and to be fully aware that I am outside and in nature now.

(Rural respondent 7, male, 42)

Another 66-year-old man from Nottuln said that every time he is on vacation with his wife, he first enjoys the new landscapes but after a while he misses his garden and the birds who visit him in the morning:

I like being away and seeing something new. But when we are on vacation for too long I secretly wish to return home as I start to miss our garden and the birds, and the avenues lined with trees. I then imagine myself cycling along the streets on my way home and can feel this connection and love for the nature back home.

(Rural respondent 12, male, 66)

A 25-year-old woman from Paderborn also described how an exchange semester in China made her realise how beautiful nature is in Germany and how important clean air and green space is to her. She said:

When I was in China, you sometimes could not go outside because the air was so polluted. I could never go for runs because it was not recommended. Everything was so grey and full of people. There, I realised how important nature is for me but not just any kind of nature but the nature I grew up with. The green forests in spring and the yellow fields in summer. When I was back home I could appreciate nature so much more.

(Urban respondent 2, female, 25)

Age and lifestyle often determined how much time and resources respondents had for being mindful and attentive with nature. Increased awareness of the importance of nature not only grew via its absence, but also with age and (emotional) *maturity* from life experiences. This often shifts respondents' values and priorities.

75 percent of all respondents across both case study areas confirmed, that as they grew older, they became more aware of their nature connection.

A 66-year-old-pensioner, for example, who worked as a teacher, remembered that he would laugh about his elderly mother having all this spare time to watch birds while he was working full-time and busy with his family life. He said:

When we came home, we were still busy, but my mother was just sitting in the living room and was looking into the garden. She looked and looked, and had fun watching the birds. I thought: 'Typically old people... sitting there and watching the birds...' Funnily enough, now we sit here ourselves, watch the birds and have fun with them ... Yes, that's the way it is, it has to do with age, that certain things, certain stimuli become less important, and life becomes less hectic, so you feel calmer, with more serenity and peace. And then such little things are more likely to be noticed. These small things are enough to be happy.

(Rural respondent 12, male, 66)

This quote highlights that, the older he got, the more he became mindful of and developed an inner peacefulness and was able to notice simple things such as different birds and their activities. With age and maturity, he explained, these things were "enough to just be happy" (rural respondent 12). However, he noted that when he was younger, he could not relax into this peaceful state of mind as he felt more affected by external stimuli and a hectic lifestyle.

Another 52-year-old urban male also discussed how his connection with nature changed and intensified with age and maturity. He remembered that he did not enjoy the Sunday walks through the forest when he was a child. Now he longs for them and reflected:

I think you develop a greater sensitivity for things such as nature the older you grow.

(Urban respondent 10, male, 52)

A 49-year-old man from Paderborn also described how his nature connection changed with age and maturity. Although he explained that he always spent time outside, he rather used nature as a place to challenge himself and to go on adventures than to be mindful and present. He said:

When I was younger, I used to go camping a lot with friends. When I look back, I can see that this was less about being in nature than hanging out with friends and challenging when we went kitesurfing for example... When I now go camping, I often go on my own. I am I pay a lot more attention to nature. Even though I spend less time in nature compared to when I was younger, I now feel a closer connection with nature because I am a lot more mindful and present.

(Urban respondent 9, male, 49)

Being mindful and attentive were internal qualities not necessarily based on where people lived, but acquired with age and maturity.

A 67-year-old woman from Paderborn also stated that she was more result driven when she was younger but is now calmer to create moments where mindfulness can happen. She said:

Sometimes when I ride my bike I look a certain flower or take a picture of a landscape. I never had that before. When I was younger, bike tours meant to get from A to B. Since I have retired, I can enjoy the journey a lot more and feel more present to take nature in.

(Urban respondent 12, female 67)

The fact that nature connection increased for most respondents with age and maturity could be a result of their positive childhood experiences with nature: a factor that almost all respondents mentioned. A 30-year-old woman from Nottuln, for example, explained how her positive childhood experiences in nature reminded and encouraged her to spend more time in nature.

I used to play in the woods all the time with my siblings when I was a child. When I was living in the city, I remembered how happy I was back then and that I don't really need anything else. We could play for hours without worrying about anything else. This motivated me to move back to the countryside to connect more with nature.

(Rural respondent 3, female, 30)

Another 29-year-old man from Paderborn explained how his solo hiking trips remind him of his childhood where he used to be in nature all day long. Growing up this way, he reflected had established the importance of nature for his life. He said:

In my childhood I was always outside exploring something or playing with my brothers. In our family that was normal, no one was allowed to stay be inside all the time or watch TV... On vacations we would always go to our little house in the mountains where I still come almost every summer to go hiking and to be in nature. Sometimes people ask me if that's not to isolate or if I feel lonely by myself. But I am happiest that way because that my time to connect with nature. And it also reminds me of my childhood where we always were in nature all day long.

(Urban respondent 4, male, 29)

Growing up on a pony farm, another 38-year-old woman from Paderborn explained had created a deep connection with nature that always remains, regardless of where she lives. Although she has moved to Paderborn, her love and connection has not changed but she has become more aware of it. Due to this connection she established in her childhood she tries to integrate nature into her life as much as she can and explained:

When I was a child nature was my life. I knew when the horses lost their fur and when hay was made, that was my daily life. These are so precious memories because I was so happy on the pony farm. Back then I never thought about my connection to nature because there was no need for it. I am now a lot more aware of this and can tell that my childhood was a fundamental part that has 'activated' my love and bond with nature.

(Urban respondent 7, female, 38)

These findings highlight that people's relationship with nature is a dynamic process that changes and transforms throughout people's life. My results from both case study locations highlight that more important than where respondents live are internal factors such as their ability to be mindful and present in nature as well as positive childhood experiences in nature. Childhood experiences help to establish a bond with nature and enable respondents to reconnect after periods of absence or less contact with nature.

4.3.2 Knowledge, familiarity and place attachment

Familiarity and knowledge about nature as well as place attachment were found to increase respondents' perception of nature connection. This was more important for rural respondents, particularly those who work with nature. Some 58 percent of rural respondents mentioned these themes as an important part of their nature connection in comparison to only 16 percent of urban ones. Thus, in this case there is a clear difference between the case studies.

The fact that less urban respondents mentioned themes of place attachment and familiarity with local nature as part of their nature connection could be because the majority of urban respondents did not grow up in Paderborn but moved there to start a

job or go to university. A 29-year-old PhD student for example explained why his nature connection did not relate to Paderborn. He said:

I moved to Paderborn 2 years ago to start my PhD. I think nature here in Paderborn is nice but I have not explored many areas yet. I think the longer I stay here the more I feel home and familiar with everything.

(Urban respondent 3, male, 29)

Another woman from Paderborn said that the city does not evoke the same feeling of nature connection she felt while exploring National Parks in other countries. She stated:

For me being in nature means to be far away from cities. No roads, no buildings and all this. Of course, you cannot experience this in Paderborn city. That's why I love to go travelling. Last year I travelled with a van through Canada. In those National Parks I felt closely connected to nature. That is different to the nature experience in Paderborn.

(Urban respondent 5, female, 35)

Rural respondents instead, particularly those who worked with nature, more often mentioned themes of familiarity and place attachment to the case study location, which was part of their bond and connection with nature. Since most rural respondents grew up in Nottuln, they had more historic memories and personal experiences with nature in and around Nottuln than was the case for their urban counterparts, and more often referred to specific places while talking about their nature connection. A 60-year-old gardener from Nottuln for example explained how his nature connection linked to his sense of belonging. He said:

I grew up in Nottuln and in the street where my house is, I used to play with my friends. But back then it was all woodland and farmland. We built little hats and rode our bikes around here. I think I feel connected to nature here because my own story is intertwined with it.

(Rural respondent 10, male, 60)

Another farmer from Nottuln also stated that his nature connection underpinned his familiarity and knowledge about his land and his animals. Since he cared for them from an early age he felt closest to the nature on his farm. He said:

I know my land, the forest and animals best. I know what they need, I grew up here. My father taught me everything I need to know. That's my connection to nature. I take care of it because I know how to do that.

(Rural respondent 4, male, 31)

For the farmer, his personal history with the place and familiarity with his land established his bond and connection with nature. Analysis shows that being familiar with

the landscape and feeling attached to certain places allowed respondents to perceive and connect with nature in a more mindful way.

Another elderly female rural resident said that growing up close to a forest created her attachment to trees. Growing up in this environment established a familiarity and love for nature that provided a sense of belonging and home for her. This identification and attachment to the trees in this area was fundamental for her love of nature. She stated:

I am a person who is infinitely connected to the forest. As soon as I step into the forest I feel like I am being hugged by it. I just feel safe there – like coming home... I love to only watch the play of lights when the sun shines through the leaves. Especially in spring, when everything starts to get lush and green and you watch it how it grows every day and becomes more. I also like the mountains, or the ocean, but I think forests are just that type of nature I feel closest to because I grew up with it.

(Rural respondent 11, female, 62)

The higher number of rural respondents who mentioned the aspect of familiarity and place attachment as essential for their nature connection, suggest that my respondents in the countryside were more connected to their local environment and had a greater sense of place attachment and belonging. This could be further investigated and studied with a bigger sample to see whether rural residents have a greater knowledge about their local nature than urban residents.

In this study, this special bond to people's local environment was not always established from an early age but could also grew and developed the more people learned about their natural surroundings and consciously familiarized themselves with it. Hereby, different types of nature were found to evoke different reactions within respondents. For example, one rural female aged 49, who had moved from Cuba to Nottuln described how she slowly got familiar with the new landscape of meadows and trees. Since she grew up with the ocean, she always had a close bond with water and the sea, which shows that different landscapes evoked different feelings within respondents. Only after she learned more about nature in Germany could she establish a stronger sense of nature connection and develop an attachment to the forests and fields in Germany, as she explained:

That was all so new for me, the landscape, the forests and animals. From Cuba I only knew the ocean as I grew up there and spent all my days at the beach. I still have a very special relationship with the ocean and can read the waves and conditions a lot better. But since my partner took me birdwatching and explained all these things to me, I can connect with nature a lot more. In fact, all the knowledge that is available in Germany really sparked my interest and made me engage and care for nature a lot more.

(Rural respondent 8, female, 49)

Gaining knowledge and learning about nature, however, was a theme that was dominant for both, rural as well as urban respondents. 66 percent of urban respondents stated that gaining knowledge helps them to feel closer and more connected with nature compared to 58 percent of rural respondents. Sometimes technologies such as smartphones or social media encouraged respondents to learn about the local nature. One rural pensioner, aged 66, said how an app helped him to learn more about local flora and fauna and in turn how he became more mindful and attentive of the nature that surrounds him. He stated:

To be honest I could never differentiate the birds in my garden. Since I have this app on my phone that can identify the differences. When we go for a walk, we often take picture and then I can identify and learn about local plants or trees. It wasn't always like that. Before I didn't pay much attention to those little details and wasn't interested in stopping, looking, and listening carefully. Having greater knowledge about these things has really intensified my connection with nature.

(Rural respondent 12, male, 66)

Another 22-year-old female said that she likes following Instagram accounts that post pictures with fun facts about nature in Germany. This, she explained, made her more curious about nature in the area:

I love these Instagram accounts where you get these fun facts from. I follow some accounts from local channels that posts beautiful pictures with fun facts about the environment here in Germany. Sometimes when I go for a walk with our dog I recognize things, such as little insects or a leaf I did not notice before and then I remember the stories about it.

(Rural respondent 2, female, 22)

Watching nature documentaries and learning about nature was another popular way to increase respondents' knowledge of nature. People stated they gained a better understanding about complex ecological or environmental from watching documentaries, which helped them to feel more connected with nature. A 67-year-old woman from Paderborn, for example, explained that she loves watching nature documentaries since she cannot go to foreign national parks and diverse places in nature anymore herself.

Nature documentaries are my hobby. I actually learned so much from these series and I have a better understanding how different ecosystem in other parts of the world works and look like. Documentaries also convey complex information about climate change for example in a way that I can also understand it. I think that is very helpful and has improved my understanding a lot.

(Urban respondent 12, female, 67)

Another student from Paderborn stated that she also feels a lot more attached to nature in different parts of the world and has a better understanding of the interconnectedness of (eco) systems around the world. She said:

I think nature documentaries have helped me to understand how different things affect each other. When you only look at Germany, you cannot fully grasp how our behaviour affect the climate in South America for example. But with the help of documentaries, I better understand how everything is interrelated.

(Urban respondent 2, female, 25)

Technology does not necessarily distance and distract people from nature but can also revitalise their curiosity and engagement with nature. Familiarity, knowledge and place attachment are therefore important factors that play a role in increasing people's bond and connection with nature. Familiarity and place attachment, however, were factors that shaped nature connection particularly for rural respondents. Learning about nature and understanding complex issues on the other hand was helpful for both urban as well as rural respondents to deepen their nature connection.

4.3.3 Remoteness and distractions

Some 80 percent of respondents described their ability to connect with nature mindfully strongly affected by the landscape and their perception of remoteness while being in nature. Urban as well as rural respondents stated that a sense of 'wilderness' and isolation helped them to be more mindful and attentive of nature. Most respondents said they preferred "unbeaten tracks", "remote places", or wild areas with few people in order to feel more connected with nature.

One 62-year-old female rural retiree, for example, explained that she deliberately looked for remote paths and undisturbed places, so she can fully connect and experience nature mindfully.

I love hiking in the mountains over hill and dale and on narrow paths. I don't really like the wide paths so much, and certainly not where many people go. I tend to go off the beaten track, to enjoy the landscape undisturbedly.

(Rural respondent 11, female, 62)

Another 35-year-old woman from Paderborn stated that her walks in undisturbed places without human influence are the most intense experiences of nature connection. She said:

For me it makes a big difference if I go for a walk around the Paderspring lands or if I am in a National Park. That obviously is a different nature experience that shapes my nature connection. For me I feel closest to nature when there are no

humans and everything looks untouched. Somehow that connects me to a very fundamental side of nature.

(Urban respondent 5, female, 35)

65 percent of all respondents felt disturbed by the presence of other people while being in nature and complained about how busy certain areas were, especially during the lockdown periods. As highlighted by a female aged 30 who said that encountering people in nature limited her experience of nature connection as it reduces the ability to be fully present with nature:

I don't feel comfortable anymore when there are so many people around. When we go for a walk in the 'Baumberge', I prefer to be by myself or go just with my partner. Only then I feel fully connected with nature. Unfortunately, you hardly find these places around Nottuln where you don't encounter people all the time. We have discovered some remote trails, but I wouldn't necessarily tell other people about them... because then ... (laughing) ... everyone will come...and... I don't want that!

(Rural respondent 3, female, 30)

Sharing moments in nature with strangers was another factor that made respondents feel their time in nature was less intimate and therefore less connected and close with nature, as expressed by an urban male aged 29:

How intense a moment with nature feels and how mindful I can be in nature also depends on the amount of people that share this moment with me. If I'm on vacation and there are a lot of people walking around me then I get the impression that I somehow share this moment with others and I feel less connected to nature. When I am just on my own in nature, I can take more time and pay closer attention.

(Urban respondent 4, male, 29)

A sense of intimacy with nature was found to increase people's perception of nature connection and this was valid for urban as well as rural respondents. Considering the population density of Germany and especially in North Rhine-Westphalia, this analysis indicates that respondents wish for solitude in nature may be difficult to experience/attain on a daily basis. Moments where people feel fully connected and mindful in and with nature may therefore be rare and precious. Protective behaviour towards 'secret or special' places, remote trails, or undiscovered woodlands, are explained by a rural female aged 37:

It annoys me a little bit that so many people come here to go for their weekend walks or bike tours to the Baumberge. Even from the Rhine-Rhur Area since this is such a popular place. Sometimes there are so many people that you don't feel the connection to nature anymore. But foreigners do not always know the good spots around here and I wish it stays like that.

(Rural respondent 6, female, 37)

The distractions of living in a city also impaired people's ability to connect with nature but in a different way. 67 percent of urban respondents stated cities are often distractive, loud, and noisy, which impaired their ability to connect with or experience nature incidentally. One 24-year-old urban respondent, however, explained that he does not come to the city centre to experience nature.

The city centre is very hectic, and I don't notice a lot of nature around me. But most of the times I don't go to the centre to experience nature, but because I have something to do such as buying a book or doing something else. Therefore, I don't mind that as much.

(Urban respondent 1, male, 24)

Another 38-year-old woman from Paderborn said she was very uncomfortable when she was surrounded by too many people and the chaos of shopping centres. She stated that she avoided them as much as possible and is happy when she is back home in her garden.

For me being in the city is very stressful. I think people are different and the other day I helped my friend find a dress in the shopping centre. We spend the whole day there and she loved it. But I realized that I felt so drained and did not enjoy myself as much. I know I am very sensitive and am overwhelmed easily so I was very happy to be back home with less stimulation and my garden in front of me.

(Urban respondent 7, female, 38)

A 49-year-old woman, who lived in a city for a few years, stated she even experienced a pause in her relationship with nature, as she was so distracted while living in a city. After moving back to the countryside, she realised that she said:

I almost forgot that there is more nature out there. Look, here you have it [nature] in front of your nose. It was always there but you forgot about it for a while when you lived in the city.

(Rural respondent 8, female, 49)

More nature, she explained, was a whole forest or a conservation area she could explore and not just a city park, which did not provide the same feeling of connection she longed for.

Findings indicate that mindfulness and a state of receptiveness seem to be more difficult to uphold in cities with all kinds of stimulation designed to catch people's attention. An urban respondent aged 52 explained that after spending too much time in a busy urban area it always takes him a little while to re-sensitize to be able to 'let nature in'. He said:

I always need some kind of re-sensitization after being in the city for long. But then when I am in nature for a while, I breathe differently, I perceive differently, and I hear differently again. I hear more differentiated. In the beginning I hardly

hear or notice birds. But after a while I can hear the rustling of the leaves again, which is much more intense than when I am in the city – animal voices that are suddenly louder... after a while I become more mindful and are able to let nature in much more. Then I feel fully connected to nature again, but this is nothing I consciously do, it just happens.

(Urban respondent 10, male, 52)

Needing some time to ‘open up’ again, emphasises that respondents subconsciously ‘close and shut themselves off’ from the over stimuli of cities. This, however, does not necessarily mean that urban respondents disconnect from nature, but that they apply a filter that dissolves once they are in more peaceful and less overwhelming environments. In fact, 83 percent of urban respondents agreed that urban-nature provides a different nature-experience and cannot replace nature connections in more complex and diverse ecosystems such as in the mountains or the black forest. Spending sufficient and undisturbed time in nature outside cities is hence important, as this allows urban respondents from this study to open up so they became receptive of nature again.

Based on the responses from both participant groups, nature in cities re-activate memories and re-connect respondents with former feelings and sensations they felt and experienced in nature before. Some 58 percent of urban respondent stated that although urban nature cannot replace experiences in more complex ecosystems it is nonetheless important to have as it reminds them of their nature connection and offers a space for relaxation. A 29-year-old PhD student for example explained:

I think we are actually lucky with the green space and the parks here in Paderborn. For me it is important to have parks because I only have time on the weekends to go and experience nature outside the city. It's nice to see nature when I just want to go for a short walk. I then look forward to the weekends when I have more time to explore.

(Urban respondent 2, male, 29)

Another urban resident also aged 29, works in an office most of the time and explained how a brief walk in the urban parklands (refer Plate 4.2) reconnects him with the feelings he had in nature before. He said:

I think, when you are more ‘mature’ in your relationship with nature, you don't always need it because you know it's there. And sometimes it's enough to recall this connection briefly by going for a short walk or even looking out of my office window to see a tree. If you had prior experiences with nature and felt such a close or intense connection, you may go outside for 5 minutes to feel this connection that others may look for or establish within a full day. Or never find. That recharges me! But of course, now and then I still need to go further away to rebuild and strengthen this relationship, for example by just hiking and camping on my own.

(Urban respondent 4, male, 29)

Plate 4. 2: Paderspringparklands in the city centre of Paderborn.



Source: © Lina Loos

An urban respondent, a 67-year-old woman from Paderborn also explained that she only needs a certain stimulus to reactivate memories to remind her of her close connection with nature. Whenever she sees a cherry tree, for example, she immediately feels the love and connection with nature since she is reminded of her childhood when she sat under those trees and listened to her grandmothers' stories. Seeing cherry trees even in the city, feeds and reactivates her love and connection with nature.

According to statements made by respondents on their' relationship with nature there seems to be a *stable* emotional connection that they can call upon and reconnect with. However, it is also a *dynamic process* that needs to be strengthened and built upon in more diverse environments such as the mountains or national parks. Another man aged 49 explained that his lifestyle restricts the time he has in nature. Since he has a strong foundation and bond with nature due to former connections, having longer periods apart does not decrease his love for nature, as he explained:

My days a very busy and full of work. I love nature and feel very connected with it. Sometimes however, I get so caught up with my projects that I do not see anything else anymore. When I then have my lunch break in the parklands, I enjoy this quiet moment. I sit on a bench and close my eyes and only hear the birds or the wind. And sometimes I am back there: in the mountains, or on my kitesurfing board and I know I want to go there soon to experience that again.

(Urban respondent 9, male, 49)

Different types and forms of nature, such as conservation areas or national parks in contrast to city parks, seem to fulfil different functions and either remind people of their nature connection or build and develop this relationship further through engagement and interaction. As a 52-year-old man from Paderborn exemplified:

I live in the city centre of Paderborn and still feel connected with nature. In fact, I deliberately look for nature in the city during the week when I go for my walks. And then on the weekends often drive to my hometown, a little village in the countryside to experience more nature in the Conservation Areas there. There I can ride my bike properly and go for longer hikes where I see so much more nature and diverse environments. With this balance I feel very comfortable living in the city.

(Urban respondent 10, male, 52)

Being able to experience both, urban nature as well as nature outside of cities was clearly important for the human-nature relationship in the urban as well as rural case study area.

4.4 Transformative nature experiences

Analysis shows that transformative experiences in nature encouraged respondents to engage and actively care for nature. Overall, 37 percent of respondents reported they had a transformative experience in nature that changed their commitment to care for nature. Transformative connections with nature were characterised by respondents, as being in awe and feeling overwhelmed with a deep feeling of love, belonging and integration into nature. Respondents described transformative experiences with nature as “being hugged” (rural respondent 11) or “embraced by nature” (urban respondent 9), as an “overwhelming feeling of gratitude and universal love” (rural respondent 1, urban respondent 4), but also as a humbling feeling and form of respect by becoming aware of one’s own insignificance (rural respondent 5, urban respondent 6).

A 32-year-old man from Paderborn, for example, had such an experience in the outback of Australia. He said:

I think everyone should be in awe and amazed by nature at some stage. I believe that's sometimes difficult to experience for a lot of people these days, especially in urban areas and when there is light everywhere. Have you ever looked at the night sky for what it really is? I experienced that in Australia. That made me feel like... wow, we don't mean anything and that's all...one...! What are we actually arguing about all the time? For me, that is part of the connection we should establish with nature and experience from time to time.

(Rural respondent 5, male, 32)

Again, analysis shows little difference in perspective between urban and rural respondents, with both groups having experienced transformative experiences of nature. *Where* those transformative connections with nature took place, however, was important. It is notable that urban areas or city parks were not mentioned. In fact, transformative nature connections were only experienced in ‘wild’ or remote places in nature, where there was little human influence or disturbance. A sense of isolation and being overwhelmed by nature’s force and beauty triggered a shift in respondent’ perspectives such that they described as becoming aware of one’s own insignificance while being part of the whole. A 37-year-old woman from Paderborn for example explained how seeing huge waterfalls in the United States transformed her perception of nature:

I was standing next to this huge waterfall in the National Park. Seeing this force of nature was just incredible. No one was around – it was just me and all this water around me. It was so beautiful and powerful at the same time. In that moment I saw what nature really is and what it can do. I think we underestimate it sometimes when you only see the tamed and cultivated side of nature in Germany.

(Urban respondent 6, female, 37)

As much as urban nature reminded respondents from this research of their nature connection, it became clear that this could not replace more powerful experiences in diverse and overwhelming landscapes, which provides a sense of remoteness, isolation and immersion in nature. Experiencing the force of nature seemed essential for deepening and transforming respondents’ perspective of themselves and nature.

Respondents, who had a transformative experience in nature felt a stronger sense and urge to protect the environment and became actively involved and/or more passionate about their projects to improve ecological wellbeing, which included a more harmonious relationship between people and their environment. These experiences built on existing nature connections to provoke more engagement. One rural respondent, for example, became a political activist and joined a nature conservation initiative. A gamekeeper and the gardener took their transformative nature-experiences as a confirmation and reward, that caring for nature due to their occupation was the right choice despite its hardships. As a gamekeeper from Nottuln said:

These moments...that’s what I want to live for. That’s why I love my job and know that I don’t want to do anything else in this world. Nature revealed its beauty to me and I feel it is my responsibility to maintain a world were all this can still happen.

(Rural respondent 5, male, 32)

Overall, respondents explained that these experiences transformed their willpower and gave them the strength to become active and engage in environmental projects in their spare time regardless of effort. These experiences of transformation acted as motivations to change something for the better, regardless of how hopeless it seemed. Respondents who had a transformative nature experience talked about the new sense of responsibility they felt for nature and the planet. A 62-year-old woman from Nottuln for example stated:

These moments give me strength. Sometimes I get a bit desperate when I look at the environment and our politicians. Because of my transformative moments in nature, I know what we can lose. I feel it is my purpose and responsibility to prevent more destructions of our planet. Therefore, I keep on engaging in environmental activism to increase awareness and inspire people to change their behaviour towards nature.

(Rural respondent 11, female, 62)

Another 25-year-old student from Paderborn, who leads a student initiative at the University stated that the transformative experience in nature encouraged her to do something to improve the state of the environment. She said:

I experienced such an intense and close connection with nature. I want to give back because I felt so much love and belonging from nature. That's why I started the sustainability initiative to have the biggest impact possible.

(Urban respondent 2, female, 25)

Other respondents, such as a 29-year-old man from Paderborn also had a transformative experience in nature and became even more passionate about his job to develop electric car solutions to improve sustainability.

Deeper analysis of data showed that these transformative nature experiences were also shaped by gender.

4.4.1 Male perspectives of transformation

The analysis showed that when experiencing nature, 'danger' or excitement was central to how men were transformed by it. Those moments in which male respondents experienced an intimate and transformative connection with nature, contained intense or dangerous components, where they felt a strong adrenalin rush, tested their limits, or were confronted with an existential fear. A 49-year-old urban resident, for example, explained how alive and close with nature he felt while overcoming his fear of heights when hiking in the mountains:

For me the most profound experiences of connection were related to periods of high adrenalin or existential fear. A couple of years ago I was hiking with a friend and there were only cliffs to the left and to the right. The way back was as dangerous as the way forward...and...I am scared of heights, you know! But this existential fear and the adrenalin rush once you made it.... I felt amazing and so close with nature!

(Urban respondent 9, male, 49)

Another 29-year-old urban male had a similar experience while hiking and testing his limits in the mountains, but found most pleasure and closeness with nature in this humbling experience. He said:

I do feel a lot of respect and sometimes even fear of nature, although I am not scared easily. I deeply trust nature. Of course, I know that nature sometimes hurts you, but that is part of my trusting relationship with it. This summer for instance I hiked in the alps and got lost in the mountains. I had very little water with me and I had no idea if I can make it to the next shelter. That was an intimidating experience but, on the other hand, it felt very beautiful and intense to get to know myself and to fully feel nature and myself in it.

(Urban respondent 4, male, 29)

Overall, male respondents described their transformative experiences as being in dangerous situations, when they experienced nature's beauty as well as its danger. Being confronted with the fact, that they could possibly die, did not weaken their nature connection but provided a new perspective: they experienced their own vulnerability through the confrontation with nature's force.

An urban male respondent, for example, talked about the "mercilessness" of nature as it follows the principles of life and death, growth, and destruction, which apply to everyone. As death is one of the most fundamental experiences of human existence, the confrontation with their own mortality provided male respondents with a wider perspective on their own existence and their place in the world. It ultimately connected them on a fundamental level with nature and its underpinning principles. Having experienced those transformative connections with nature also created new levels of affiliation with nature, characterised by an overwhelming feeling of love and gratitude and belonging, as this 29-year-old man from Paderborn tried to illustrate:

There was a term for that feeling, when the first people flew to the moon and took a picture of planet earth. I can't remember the exact expression but some kind of tender love and a sense of responsibility for our planet... That is a very similar feeling that I feel when I look of at planet earth or when I am deeply in nature – I find it very emotional. I feel so much love and belonging ... I don't know if that's the case for many people.

(Urban respondent 4, male, 29)

Transformative experiences such as these, in which respondents experienced themselves as a part of nature, reminded them that they *are* 'nature', and in turn these feelings evoked a new sense of responsibility and belonging. Moreover, male respondents, when confronted with their own fragility and mortality changed their perception of being in charge or control, which the majority described as a humbling experience of letting go of their ego.

Outside of being reminded of one's own mortality, transformative experiences also provoked feelings of integration and affiliation. For example, a gamekeeper aged 32, noted that when he shot his first deer, the hunting experience connected him to the natural cycle of life and death. He said:

There was a very special moment when I shot my first deer. It was dead immediately. I went down to do that an hour later when it was dark already and the moonlight came out. So, I sat down in the moonlight, sticking an oak leaf into the deer's mouth to give him its "last bite" and I took a moment to process what just happened. And then, all of a sudden, I had this experience. I don't know how to describe it, but in that moment, I didn't think anymore but just felt. It was like this feeling of being one with everything – the light of the moon, the trees around me and, and, and the animal there.... you just feel so connected to the fact that you are ... oh, I'm getting goose bumps again... simply because you are involved in this cycle, this cycle of life, you know? That you are one with everything around you.

(Rural respondent 5, male, 32)

Feeling one's own insignificance but also experiencing oneself as being part of everything, characterised these transformative connections with nature. A 19-year-old male respondent, who camped in a Peruvian jungle, noted that he became aware of nature's force and beauty while perceiving himself as an insignificant part of it. Although he did not experience an existential fear, he similarly felt in contact with nature's overwhelming power and beauty which in turn made him realise his own insignificance. He said:

The closest and most profound experience I had was in Peru. We slept in a tent in the wilderness of the rainforest... and you could hear everything... and you were part of it. And we got up in the morning and suddenly this giant monkey was standing maybe 2 meters away from us. But that wasn't this stereotypical adventure tour, where those things are set up for tourists. It was just the way it was – real! And that was such a super overwhelming feeling, and at the same time a total lightness, when you know that nothing is staged and that everything would work without you, that you play no role at all. Everything is simply and happens without you. I actually felt pretty unimportant at the moment. But at the same time, I was also part of it. And somehow, I felt such a huge gratitude to be able to be there, to be able to experience that, and to know that it is quite unique and that such a moment is not coming back so quickly.

(Rural respondent 1, male, 19)

The way that these experiences set context for their own place in the world also evoked a sense of humbleness, love and connection with nature amongst respondents, as a 60-year-old rural respondent highlighted well when he said:

Experiencing the force of nature, being confronted with existential fears, and becoming aware of our own place in this world...when you have experienced that... then your relationship with nature develops. These experiences in nature changed my whole perception of myself and this world. The fact that you even get these feelings and thoughts and reflect about them in such a way... this sensation of awe... and at the same time some kind of humility and universal love... for me this is spiritual.

(Rural respondent 10, male, 60)

Feeling and perceiving such a connection with nature “opened respondents’ eyes” and transformed their outlook of the world. In fact, all male respondents argued that these experiences profoundly changed their relationship with nature. Being challenged and/or touched in such a way made their ego dissolve for a moment and created an openness enabling them to experience an intense connection with nature and themselves.

4.4.2 Female perspectives of transformation

In contrast to how men experienced nature transformation, female experiences were characterised by finding peace and harmony in nature. They experienced a ‘flow state’ of awe, affiliation, and universal love, in which they felt fully immersed and embraced deeply with nature and themselves. Women asserted that for them transformative moments in nature dissolved the physical boundaries between them and nature. Instead of being grateful and attentive of nature, women described how they experienced spiritual feelings of universal love and oneness with everything, which were so powerful that they transformed their perspectives and became a source of strength which motivated them to stand up and advocate for nature’s wellbeing.

A 25-year-old woman from Paderborn, for example, had memorized how she connected with water in a special way and that she felt completely integrated and absorbed by it:

I went to Austria once with my mum and swam in a mountain lake there. That was in the middle of nowhere and just nature around ... and then I went into that lake ... and ...I could really feel the lake, everywhere. I was part of it! Water is a completely different element than air, or wind. It fully immerses and embraces you and you become part of it. I felt very close with nature there.

(Urban respondent 2, female, 25)

Feeling sensually embraced and immersed by nature triggered a deep sense of connection and oneness for female respondents. As water is a fluid element that encloses the whole body, it evoked for this respondent a spiritual impression of oneness that transformed her perspective of who she is and how she relates to nature.

In another example, an elderly lady aged 67 from Paderborn also described how sleeping outside in the forest transformed her perception of merging with nature, and evoked a feeling of deep humbleness and gratitude. She said:

What is the total connection for me is to sleep outside in nature, - or when I was younger to have sex in nature. I love those direct feelings nature evokes within me, for example feeling the wind and the sun on my skin, I think that's wonderful. A couple of years ago I slept outside in the Hartz under beautiful trees, I remember those nights so vividly as I was fully immersed in the forest ...and it was such a silence ... all night long. And then at some point you hear the first birds starting to sing. That was such a beautiful and humbling experience as there was nothing between me and nature!"

(Urban respondent 12, female, 67)

Another woman, aged 62, had a spiritual connection with nature where the boundaries between her and nature dissolved in a peaceful moment after a long hike in France. This moment of transformation was characterised by an internal connection with herself and with the world around her, which evoked her feelings of universal love, deep affiliation, and belonging. She said:

One day I walked all day long just by myself through the fields and forests in France. All day I was outside and heard the birds sing and was in absolute silence – just with myself and nature. When I had a rest and sat on bench to look over the landscape I had this feeling within myself. A deep feeling of serenity, affiliation and universal love with nature and everything around me. I felt still and in silence with me and nature and could not tell where I end and nature begins.

(Rural respondent 11, female, 62)

This sense of deep affiliation and belonging to nature that female respondents described was related to their own connection and centrality within themselves, which they often found were invoked in the silence and solitude in nature. These meditative moments awoke spiritual connections with nature that were experienced as universal love, affiliation and deep belonging in which the boundaries between them and nature dissolved.

As these moments in nature transformed respondents' dichotomous perception of themselves and nature, people started to feel a new sense of responsibility and wanted to become active and engage in nature-conservation or other ways with the aim of improving

ecological wellbeing. Findings from this analysis, therefore, highlight that transformative nature-experiences may play a significant role in the attainment of ecological wellbeing: in both case study areas, they encouraged respondents to become active and initiated a stronger commitment to protect nature.

4.5 Summary

This chapter presented modes of nature connection in rural and urban areas. Respondents from both case study locations had similar themes in their description and experience of nature connection. Analysis showed that respondents from both areas are mindful and attentive of nature and feel emotionally connected with nature. Cities were not found to be places, where the human-nature relationship atrophies. Mindfulness and attention were influential factors that shape and increase urban as well as rural respondents' perception of nature connection. Familiarity and knowledge about nature as well as place attachment also was found to increase people's perception of nature connection, which were more dominant for rural respondents, particularly those who worked with nature. Different types and forms of nature, such as conservation areas or national parks in contrast to city parks, seemed to fulfil different functions and either reminded respondents of their nature connection or build and develop this relationship further through engagement and interaction. Results hence demonstrate that the relationship respondents built with nature was a dynamic and evolving process that transforms and changes throughout their lives. In both case study areas, positive childhood experiences in nature were a key driver for nature connection, but age and maturity were also found to positively affect nature connection. Results also showed the significance of transformative experiences with nature as they enhanced the commitment of respondents, who then wished to become actively involved in the promotion of ecological wellbeing. Findings from this study, however, also highlight that transformative nature-experiences were not dependent on the characteristic of being an urban or rural resident, but are rather shaped by gender and the remoteness/diversity of the landscape.

5 NATURE DISCONNECTIONS

5.1 Introduction

While connection to nature is fundamental to the human-nature relationship, its counterpart nature disconnection also plays a crucial role. This chapter five discusses the topic of nature disconnection and first presents respondents' perceptions of disconnection followed by the view of the practitioners. Practitioners mainly talked about challenges and obstacles, which they experienced while working in their professions. As they did not measure nature connection by people's emotional bond with nature, but by their behaviour in nature. Therefore, they mainly contributed to themes of nature disconnection and environmental destruction. Respondents on the other hand contributed little to the topic of nature disconnection. This was because urban as well as rural respondents did not perceive themselves as disconnected from nature and appeared not to relate to it. They also could not think of many forms and aspects of nature disconnection. However, there were four respondents, who worked with nature and mentioned the same themes of nature disconnection as the practitioners: a farmer, a gardener, a gamekeeper, and a shepherd. They tended to draw on their experience when reflecting on their nature connection. Their responses have been presented within the section of the practitioners.

The analysis shows that it is as important to understand disconnection as it is to understand nature connection. The chapter provides insights about which aspects of the human-nature relationship need more attention so as to counteract growing alienation and separation from nature.

5.2 Urban and rural respondent perception of disconnection

This section presents findings on how urban and rural respondents perceived nature disconnection in both case study areas.

Highlights

- Overall, there were no significant differences found between urban and rural respondents' perception of nature disconnection. The majority constructed disconnection as being a missing emotional bond, a lack of attention to, and appreciation of, nature.
- Neither urban nor rural respondents perceived they were 'disconnected' as they all enjoyed being in nature and expressed appreciation for it on different levels.
- The ways in which respondents used nature was described and articulated as harmful and disrespectful to nature. Primary production was referred to as a prevalent form of nature disconnection, despite the reliance of respondents on natural resources.

5.2.1 Disconnection as inattention and emotional closure

Urban and rural respondents described nature disconnection as being a form of inattention and an internal closure that prevented people from 'being emotionally touched' by nature. A 37-year-old woman from Nottuln for example stated:

I suppose it is a matter of how much you are able to take nature in. I think there are many people who just spend time in nature and hurry through it but don't really pay attention. I am not judging anything, but it is the quality of time you spend in it, how you spend it, how attentive and receptive you are.

(Rural respondent 6, female, 37)

For 58 percent of rural and 75 percent of urban respondents, nature disconnection was described as a mental and/or emotional state, mainly affected by internal attributes such as people's stance and attitude towards nature. Being physically in nature was therefore not necessarily an indicator of being 'in touch' with nature as the majority of urban as well as rural respondents described disconnection as an internal separation and 'closure' where they did not notice or feel nature. As a 62-year-old woman from Nottuln explained:

Disconnection is to permanently live without nature and to not miss it. These are people, who cannot enjoy nature, don't experience it fully, and simply don't feel the value of it.

(Rural respondent 11, female, 62)

Another man from Paderborn described disconnection as people's inability to enjoy nature since they did not pay attention to it:

For me people are disconnected when they do not see the beauty of nature... When a beautiful landscape does not make them feel happy or when the first flowers in spring do not fill them with joy. These things, when you don't care about nature because it does not touch your heart.

(Urban respondent 10, male, 52)

Interestingly, not one of the respondents described a personal disconnection but referred to other people's relationship with nature instead depicting oppositional characteristics to describe nature connection.

As a 49-year-old woman from Nottuln, for example, stated:

I can't really relate to nature disconnection as it doesn't apply to me. But I would consider people as disconnected who don't notice nature and don't care. When they throw rubbish everywhere and say nature doesn't matter. These people are ignorant!

(Rural respondent 8, female, 49)

Another 66-year-old man from Nottuln explained:

Nature is very important to me therefore I don't consider myself disconnected. There are, however, other people who destroy the environment. These people don't love nature but are just interested in their own benefit. I really don't understand this.

(Rural resident 12, male, 66)

The fact that these descriptions of disconnection are contrary to respondents' own relationship with nature indicates that nature connection was perceived as a positive and desired social value. Disconnection on the other hand had negative connotations so respondents did not identify with it.

Even though none of the respondents perceived themselves as disconnected, six of them did reflect on phases in their life where they described themselves (retrospectively) as being separated from nature. Separation and disconnection, however, were perceived as something different. *Separation* or the absence of nature was seen to be induced by external factors such as people's living environment, in contrast to a missing emotional bond that characterised *disconnection*.

A 49-year-old man from Paderborn for example explained:

I would consider myself as separated from nature but not as disconnected. Because of my job I do not live in the countryside and cannot spend much time to spend in nature. In my office and at home I can't say I have much contact with nature; therefore, my life is separated from nature. Nonetheless, I deeply love nature and feel the connection to the natural world.

(Urban respondent 9, male, 49)

The periods in which respondents felt most separated from nature occurred when they lived in cities and/or maintained a busy work or study lifestyle preventing them from experiencing nature. A 25-year-old Master's student from Paderborn for example stated that her degree keeps her occupied so she cannot spend more time in nature. She said:

Being a student means that you have no time for nature, which makes me very angry. Society pressures you to succeed and if you don't play this game, you won't find a job. I love nature and I love spending time in nature. But since I want to finish this degree, I cannot make nature a priority.

(Urban respondent 2, female, 25)

During those phases of separation respondents were not always aware of their own separation from nature, as a 30-year-old woman from Nottuln explained:

Now when I look back, I think I was very separated from nature when I lived in the city and was studying all day long, sitting in a shared apartment, concrete everywhere and only seeing streets and buildings without having the possibility to go into nature. Just being in the city, shopping but I did not realize it back then.... Surely there were some city parks but it's not the same as the meadows and forests we have here. When I came to see my family in the countryside, I realised how much I missed nature.

(Rural respondent 3, female, 30)

In reflecting on her life when she was busy studying, this woman from Nottuln realised how separate her daily life was from nature. During those phases of separation, however, she still felt emotionally close with nature, but had no time to spend in nature. As over half of the respondents stated, 'distractions' and 'a hectic lifestyle', which created a temporary 'forgetting' of nature, while other things took priority.

A rural woman, who recently moved back to the countryside, for example, explained:

I suppose when you are busy with other things you sometimes don't notice how little contact and interaction you have with nature. When I lived in the city I had so many things to do that I would not miss having a garden or spending more time outside in nature. But that did not change my love for nature!

(Rural respondent 8, female, 49)

The fact that respondents did not actively miss nature indicates that they did not necessarily realize how detached their life had become from nature. This insight further emphasises that although people perceive themselves as emotionally connected and close with nature, regular contact with nature may still be missing. This, as respondents explained, often became obvious when they went back into nature and experienced some connection with nature. He said:

Every time I am on vacations and spent more time in nature, I realize how little contact I have with nature in my daily life. But in my daily life, I don't really notice that as I am very busy with my job. Spending more time in nature during the summer holidays, however, made me realize that I want to do more weekend trips to be more in contact with nature. Now I do this regularly.

(Urban respondent 9, male, 49)

The findings from both case study areas indicate that it is possible for people to be unaware of their own physical separation from nature, and that they may not even necessarily feel the need to change anything. Reconnection with nature during vacation or recreational time, however, could remind respondents how much they miss nature and may motivate them to change their lifestyle.

5.2.2 Using and destroying nature

Overall, more than 60 percent of urban as well as rural respondents identified littering and (unsustainable) consumption of nature as evidence of societal disconnection from nature. Disconnection in this case was understood as a lifestyle that consisted of a series of choices that harmed nature, such as buying cheap meat, driving a car, not believing in climate change, as well as using and exploiting nature. Urban as well as rural respondents described this behaviour as disrespectful. As a woman aged 35 stated:

Disconnection means to disrespect nature – to behave and use nature unsustainably. I feel it is a whole lifestyle and begins with not buying the cheap meat in the supermarket because you care about nature and the environment.

(Urban respondent 5, female, 35)

Another 66-year-old respondent from Nottuln explained:

Disconnection means to behave against nature. By driving a car, or by throwing rubbish into nature. It means to disrespect nature.

(Rural respondent 12, male, 66)

Not caring about nature and destroying it was seen an important factor characteristic of nature disconnection. 'Not caring', however, appeared to be related to a missing emotional bond and environmental awareness, that 'allowed' people to 'use and destroy' nature.

As confirmed by a rural female aged 54 who said:

For me, disconnection from nature means when someone has no sense for animals and has no sense for nature. I look at a tree and say: 'Oh look, how great, how old this tree is, how beautifully it has grown. How old the bark is and what this tree must have experienced. Wars, construction, roads ... everything ... and this tree is still here!' If you are not in love with nature then you would say: 'Ah, damn tree, what's that supposed to do? Let's make wood from and it will be burned. For me that is when you are disconnected from nature.

(Rural respondent 9, female, 54)

More than half of the respondents also perceived that current uses of nature are all forms of destruction that they referred to as forms of disconnection, such as cutting down trees or using nature for agricultural purposes. A 38-year-old urban female respondent for example stated:

An example of disconnection is the classical agriculture. It shows how nature is used, but ultimately nature gets exploited. We have to be respectful, value nature and not take it as granted simply because it is there, so we can just serve ourselves.

(Urban respondent 7, female, 38)

The use and 'destruction' of nature was, however, a controversial topic. Cutting down trees for firewood was perceived as 'not caring' for nature and hence a form of disconnection. Although one respondent's critique of the practice of cutting down trees, she had a fireplace herself as it is a common way of heating in Germany¹¹. Likewise, an urban respondent, who criticised the current form of agriculture says she consumes bread and food that is produced by traditional agriculture on fields in Germany. Findings, therefore, indicate that people may distance themselves from the user-side of nature as it was associated with environmental harm, yet are cognitively dissonant in relation to their own actions.

Many respondents also thought having a relationship with nature via the work they did was perceived as critical. Urban as well as rural respondents assumed that people who work with nature would enjoy nature less. Despite caring for their land, occupations such as farming were perceived as forms of disconnection, characterising farmer relationships to nature as "exhausting and money oriented. I would not enjoy this anymore!" one rural

¹¹Currently, there are around 11 million wood-fired ovens in Germany (Jung 2019).

respondent explained. How practitioners and respondents who worked with nature perceived and understood nature disconnection is presented in the following section.

5.3 Practitioners' perception of nature disconnection

The following section presents findings from interviews undertaken with practitioners and the four respondents mentioned earlier, who had an occupation that involved nature; the farmer, the shepherd, the gardener and the gamekeeper. Rather than measuring disconnection by people's feelings for nature, in the interviews, these practitioners rather evaluated nature (dis)connection based on people's behaviour and whether they showed any commitment to care for nature. Overall, disconnection was perceived by practitioners as a behaviour, which resulted in negative consequences for the environment: these behaviours were not understood as bad intentions, but a result of a lack of knowledge and awareness.

Highlights

- The majority of practitioners assumed that residents lived an alienated and separated lifestyle, manifest by a lack of knowledge, and awareness that this was the main reason for environmental harm.
- Recreational users, who disturbed and disregarded nature conservation areas were considered careless and disconnected.
- Practitioners identified the idealisation and romanticism of nature as a disguised form of disconnection.
- In contrast to respondent perceptions of nature disconnection, practitioners perceived disconnection to be an alienation and separation from the material side of nature, caused by a physical detachment from primary production and food supply.
- Practitioners perceived nature disconnection as a one-sided consumption without caring for nature's wellbeing.
- People's disconnection and inability to care and look after nature was not just a personal choice or an individual "problem", but also identified as a societal and structural issue, in which caring for nature became a luxury that not everyone was able or willing to do.

5.3.1 Disconnection as lacking knowledge and awareness

While practitioners acknowledged the increased interest of urban and rural respondents in nature-based recreation, they also expressed concerns about how to go about reconnecting people with nature, particularly in fragile habitats such as nature conservation areas. The majority of practitioners articulated a belief that most residents lacked knowledge and awareness about nature and nature conservation, which they then constructed as evidence of disconnection from nature. Practitioners also believed this lack of awareness about local ecosystems and conservation standards resulted in careless behaviour, which in turn could be harmful to nature. Since some approaches to restore native ecosystems for example, are not always visible to people, they disregarded and destroyed habitats unintentionally. A practitioner from a local authority in Nottuln explained:

We restored big parts of the river in the Conservation Area for endangered fish species to breed and native birds to come back. They need reed for protection but in summer some tourists thought they can swim in that area or cool their beer in the water. They did not understand that they are destroying the habitat where little animals can live and breed undisturbedly. People don't mean to do any harm but they really have little understanding what nature conservation means.

(Rural practitioner 4)

Other examples practitioners referred to included people leaving the marked trails in forests and conservation areas and/or letting their dogs from the lead without considering its consequences (refer Plate 5.1). These factors can in practice destroy seedlings, disturb breeding wildlife, and cause wildlife accidents. As a farmer said:

For me disconnection means to not respect nature and that people don't have any idea about it anymore. As an example, many people don't know how many fawns there are in spring. They just walk mindlessly through the forest, letting their dogs off the lead and leaving the paths. Deers startled by them often run in front of cars since there are so many main roads around here. People, who come here for their Sunday walk don't realize that ... but I am the one who receives calls from people who have wildlife accidents. And that gets worse every year...!

(Farmer, rural respondent 4)

Plate 5. 1: Small paths in the Conservation Area 'Baumberge' that people have created to avoid the main tracks.



Source: © Leana Storp

Further, over 60 percent of all practitioners were of the view that nature-based recreation sometimes resulted in the destruction of protected areas largely due to the fact that residents are unaware of conservation standards and/or do not follow them. This was particularly noticeable during the COVID-19 lockdowns when more people visited nature conservation areas. A practitioner and representative from a local authority from Nottuln for example stated:

Many people don't understand that they are in a nature Conservation Area and sometimes become quite aggressive, when we ask them to stick to the path or leave certain areas alone, especially now with COVID-19 and the ongoing lockdown restrictions. Sometimes we even have to call the police. This is a huge problem as people can't go anywhere. These protected areas are insanely overused, which of course means that many biotope structures are destroyed. The demand for the use of nature for relaxation has significantly increased with Corona, which is a huge problem for our conservation areas when people are unaware how to behave respectfully.

(Rural practitioner 4)

Practitioners hence perceived people as disconnected if they prioritized their recreational activities in nature without noticing or caring about conservation standards. Another practitioner and representative from the forestry office from Nottuln also stated that the carelessness of visitors and irresponsible recreational users often resulted in disturbing wildlife, especially those species that had already withdrawn to live in remote areas. He said:

We have noticed that more people are using E-mountain bikes nowadays. I have nothing against them, but that has provided more people access to remote areas in the forest where wildlife has withdrawn, which disturbs them. Careless drivers also destroy the forest soil when they leave the trails which unfortunately happens quite often.

(Rural practitioner 3)

However, most practitioners did not believe this behaviour was intentional, rather that it demonstrated an unawareness and lack of knowledge about local nature. As a practitioner and local politician from Nottuln explained:

People don't always reflect and think things properly through. Sometimes they go outside into nature and think they do something good, but then end up doing things that aren't actually good for nature.

(Rural practitioner 1)

Among practitioners, nature disconnection was not perceived to be a missing emotional bond, but as an unawareness and inability to “blend in” with nature due to a lack of knowledge and awareness. As the gamekeeper respondent from Nottuln stated:

I see many people walking on a Sunday through the forest, talking loudly to each other without noticing anything around them and actually disturbing wildlife, and destroying little seedling or trees, because they don't follow the paths. That is disconnection for me. Connection to nature not only means being physical there but to be present with yourself, your surroundings and to integrate with it. Blending in with nature. But people behave as foreign objects and just doing their own thing. Sometimes they even harm nature – probably without knowing, which makes it even more sad.

(Gamekeeper, rural respondent 5)

People’s inability “to blend in”, “participate” and “behave respectfully”, was seen to not only manifest as an “ignorant behaviour”, but also as an inability to understand, identify and mitigate environmental harm or climate change. Rather than measuring people’s nature connection by the level of love people feel for nature, practitioners evaluated resident nature connection based on their behaviour and commitment to care for it. As one urban practitioner explained:

We have the Conservation Area Teutoburg Forest close to Paderborn. Sometimes I think people cannot be too connected with nature as for example two years ago around 2 million trees died around Paderborn due to abnormal dry periods. I thought that would have stirred up more people... but no one seemed to be bothered. Our 1.5 C degree target that we decided upon in September 2019... two years have passed now in which little has happened...How urgently we must reduce our emissions to zero does not seem to be very clear for many people.

(Urban practitioner 3)

Another practitioner and expert from Nottuln explained why people’s love for nature is not enough to stop environmental destruction and loss of biodiversity. Lacking awareness and being able to ‘ignore’ and suppress consequences of unsustainable lifestyle choices made it difficult to change behaviour, she believed and said:

I know that a lot of people love nature but unfortunately, they often lack the commitment to change anything in their behaviour. This starts in small things; people do not want to look after their gardens because it is work to them. But increasing the biodiversity in our own garden is an important step to help nature. Or let's take people's diet. It is so difficult to change people's habits to eat less meat or buy less in general. People can ignore the consequences of their unsustainable choices, which does not encourage people to make a real behavioural change.

(Rural practitioner 5)

Practitioners claimed that being unaware or ignorant of environmental harm and destruction was not an indicator of people's disconnection and separation from their local environment. People's lack of action to change their behaviour, or become active to mitigate environmental change, was seen by practitioners to characterise a disconnection from nature. Due to people's lack of commitment, practitioners assessed people's connection with nature as rather superficial. A practitioner from a local authority in Paderborn explained:

No, I don't think people are very connected to nature. In my opinion, they love nature until it interferes with their own interest. Residents often demand more nature in cities and go mad when we cut one tree because it is rotten and is a danger. But when there is a healthy tree, which roots destroy their own driveway, we need to come and remove it. Silliness is that.

(Urban practitioner 5)

The majority of practitioners, however, also believed that careless behaviour was based on the fact that financial as well as personnel resources were not available to properly implement management of the nature conservation areas and to ensure that what guidelines that exist are followed. A rural practitioner explained:

When the Baumberge was declared as a Nature-Conservation Area, we received some funding, but this was not enough to properly install a new route concept and employ more rangers to ensure that people follow the new rules. Although most people know that parts of the Baumberge are protected it is often unclear what the conservation standards apply to. Conservation standards are sometimes confusing, and I believe that many people are unaware how to behave in these areas.

(Rural practitioners 4)

The lack of resources and financial support was hence another factor seen to contribute to environmental destruction and was not related to perceptions about resident behaviour. The lack of political support to initiate environmental change was part of a wider structural problem as practitioners noticed that nature protection and conservation were still treated as a bonus in politics, and it was only invested in when the economy was doing well. As one practitioner from a local authority in Nottuln explained:

We receive money for nature conservation when the economy is up and running. As soon as the economy stops working, nature conservation laws are changed and standards lowered. The government promises, they would provide more money for nature conservation when the economy has recovered. That approach, however, is completely wrong because healthy nature is the basis to be able to live on this planet.

(Rural practitioners 4)

Another practitioner and representative of the department for environmental protection in Paderborn noted that due to the political change towards green they finally received more funding to invest in restoration projects. This, however, always depends on the political party in power, and then it takes time implement changes. He explained:

How much money we have for nature and nature conservation here in Paderborn depends on the political party in power. Now that the green party has more influence in this region, we finally have more financial resources. Paderborn is still behind...other cities are a lot more progressive and have made nature conservation and sustainability a bigger priority for a long time ago.

(Urban practitioner 5)

Another practitioner and local politician explained that nature and nature conservation is important in Nottuln but second to its economic wellbeing. He said:

Improving Nottuln's economy is the priority, but now it is also dealing with COVID-19. Just after that comes nature. Unfortunately, that's how it is because nothing works and people get upset when the economy is down and they lose their job.

(Rural practitioner 1)

The priority given to the economy and development was also visible in Nottuln's regional development plans. One practitioner and representative from the department for environmental protection in Nottuln, for example, explained that built environments are increasing, especially around Nottuln and taking away habitat for nature and endangered species, such as the little owl or the lapwing. To compensate this loss, it was necessary to establish nature conservation areas to counterbalance the loss in biodiversity. This, however, creates an increasing gap between areas low in ecological significance. He said:

These conservation areas are often the only habitat left for endangered species as growing settlement are taking away habitat for endangered species and reduce the natural biodiversity of areas. Therefore, the established conservation areas need to be protected better, especially since the growing built environment is taking away more and more space for nature.

(Rural practitioners 4)

The findings demonstrate that for practitioners, nature disconnection is a function of ignorance and lack of knowledge and awareness rather than deliberate carelessness. For them nature-based recreation was challenging, particularly in protected areas. There is a potential need to build greater awareness amongst residents in both rural and urban regions about the importance of nature conservation, as well as better protection of those areas.

5.3.2 Disconnection as romanticisation and idealisation of nature

Practitioners also perceived that nature conservation and nature protection were romanticized and idealized undertakings of nature rather than cognitive knowledge.

For 80 percent of all practitioners, disconnection from nature was also manifest as a misconception and misjudgement of what is beneficial for nature. They claimed that the approach of residents towards nature conservation is based on emotionally charged aspects without any understanding of its interconnectedness within the ecosystem. Based on their daily experience, practitioners for example mentioned they were experiencing increasing difficulties with people's misinterpretation of nature conservation. One practitioner, a representative from a local authority in Paderborn said:

We now have an initiative in Paderborn to protect the city pigeon. For me that is a very infantile way to engage in nature conservation because pigeons are a pest. People feel sorry for them instead of worrying about actual measures to increase biodiversity in the city.

(Urban practitioner 5)

Other representatives from a local authority in Paderborn, noticed residents showed increased attachment towards certain trees or plants in the city. They considered this irrational when set against the broader picture of the ecosystem integrity. As one urban practitioner expressed:

I receive many calls from residents, who complain why we drove over some flowers with the lawnmower or why we chopped down two trees. However, next door there are three hectares of untouched meadow and 500 other trees. Most people don't see the bigger picture and are primarily interested in their own goals and needs. That's my experience. They want to look at a nice tree when birds shit on their cars, or if the branches cover their solar panels. Then this 'love' for nature is quickly gone.

(Urban practitioner 4)

As the practitioners from Paderborn explained, people often lack an understanding of the "bigger picture" or of the importance of overall ecosystem integrity, and instead

passionately protect single trees or flowers, without considering the overall health and intactness of nature. Other practitioners and representatives from the department for environmental protection from Nottuln, felt that nature needed to be divided into items worthy of protection according to its beauty, cuteness, or usefulness. Examples cited included fawns, beautiful landscapes, or bees and other things less adorable such as rats, swamps, or wasps. As one practitioner from Nottuln explained:

Sometimes we receive phone calls from residents who find animals and want us to rescue or take care of them. Their willingness and sympathy to help, however, suddenly decreases when they have to drive 1.5 hours to the next vet or when an animal turns out to be less adorable such as baby rats instead of baby moles.

(Rural practitioner 4)

Terms such as “Bambi-conservation”¹² or “cognitive separation”, used to describe a nature conservation approach based on humanising animals was more important than rational estimation or understanding of biodiversity. Practitioners felt that this romanticising and idealising of nature often resulted in less effective or even contra beneficial measurements for ecosystem integrity. As a practitioner and representative from a local authority in Nottuln explained:

Because fawns are very cute people wanted to stop the killing of fawns, who hide in the grain fields. Because of the publicity, investments made in thermal cameras on combine harvesters to detect them before they were harmed, could have been better invested in the protection of grassbirds, who are endangered. But since they do not provoke the same attention and emotional response, they are neglected.

(Rural practitioner 4)

As another practitioner and representative from the forestry office explained, nature conservation is not always straightforward as the interplay of ecosystems is complex. To maintain ecosystem integrity in the forests, however, he claimed less deer would be beneficial. He stated:

Nature conservation is not always nice and easy! Often you must consider multiple factors and sometimes that means more deer need to be shot. Many people especially in urban areas however then complain, as they understand nature conservation as animal welfare. That is such a discrepancy... A healthy relationship and understanding of nature are often missing.

(Rural practitioner 3)

For most practitioners, the idea of nature disconnection construed as a misconception and misjudgement by residents of what is beneficial for nature, and they felt that people’s

¹² Reference to the Disney movie “Bambi”.

evaluation was emotionally charged and based without an understanding of its interconnectedness within the ecosystem.

Most practitioners thus made the case that decisions around nature and nature-conservation needed to be the basis of rational evaluations, rather than guided by emotions and idealisations of nature. Therefore, romanticised idealisations of nature were perceived as disguised forms of disconnection that are not always obvious. They may appear as a close connection to, and love for nature, but represent an unrealistic understanding of what nature is and entails in terms of its management. These findings, therefore, indicate that a lack of knowledge paired with a strong wish to protect nature, does not necessarily lead to better nature conservation practice.

In addition, a romanticisation and idealisation of nature, was noted by the way that respondents excluded and ignored the negative and unpleasant aspects of nature, such as death and destruction. Half of the practitioners for example, mentioned that many residents ignored the fact that nature was brutal and deadly. As an urban practitioner expressed:

A few days ago, I observed how a sparrowhawk happily dismembered three little birds. It plucked them – first the little legs, then the wings... Well, that's nature... and not these people who wants to rescue the city pigeon and all these ways to protect nature. Nature also includes death, nature is harsh, and that's normal. But some people don't want to see that.

(Urban practitioners 5)

Another rural practitioner mentioned that he had received complaints from residents when they reintroduced two eagles back into a nature conservation area. He said:

We received complaints that the Eagles should be removed as children regularly found half-eaten birds and skeletons on their way to school. But these eagles are so important for our ecosystem and biodiversity here. Unfortunately, people do not want to accept that nature also includes eating and being eaten. For some people that is unacceptable...they judge conservation based on their feelings.

(Rural practitioners 4)

These findings indicate that romanticisation and idealisation of nature can create a distorted and unrealistic impression of nature and nature protection. Due to these misconceptions, practitioners characterise nature disconnection as felt by residents as a shallow and unrealistic understanding of nature and nature conservation. They were critical of residents who only want to enjoy pleasant and enjoyable aspects of nature, and ignore the rest, which also contributes to a healthy and biodiverse environment.

5.3.3 Disconnection as a lack of caring

In contrast to urban and rural respondents who perceived nature connection as an emotional bond with nature, practitioners perceived this love for nature as ‘not enough’ or even superficial as it lacked further commitment to contribute to nature’s health and wellbeing. Some 80 percent of the practitioners stated that despite people’s emotional connection and increased leisure activities in nature, many people only *consume* nature’s beauty but do not *contribute* to its wellbeing.

A practitioner from a local authority from Paderborn for example, identified nature disconnection as a double standard when residents identify as “nature-lovers” but exhibit no further commitment or desire to contribute to nature’s wellbeing. He said:

Everyone loves being in great natural places, for instance the Eifel National Park or other beautiful places all around the world. People talk about biodiversity and sustainability, and its importance. But when you come to their own garden, most of them will have a lawn where just a daisy can survive – or a cherry laurel, or thuja. But that’s it. Because in reality, it’s more important for people to have enough space for their BBQ. But then talking about nature and suitability...?! But that’s how it is unfortunately!

(Urban practitioner 5)

Although practitioners acknowledged the recreational usage of nature as a way of having been in contact with nature, they also argued that people’s love and appreciation for nature lacks any further commitment and does not go beyond appreciation and enjoyment. Practitioners did not perceive emotional connection and love for nature as substantial nor sufficient for a healthy environment. As one representative from the forestry office explained:

I think it is great that people develop more awareness and appreciation for nature. In my opinion, unfortunately, that is not enough. It would be great if people start becoming active in doing something for nature conservation. When I sometimes take children on exploration tours to the forest, I try to involve them in restoration projects areas or we plant little seedlings together... I believe that has to happen from an early age and needs to be focused on a lot more.

(Rural practitioner 3)

A gamekeeper from Nottuln also perceived residents’ love for nature as superficial as he believed they only enjoy the pleasant aspects of nature. By only visiting nature on weekends and public holidays without active commitments to care for them, demonstrated an alienation from nature. He said:

When you are in the forest during normal working hours most of the times you are on your own. But when there is a public holiday, suddenly everything is packed with cars and people walking around everywhere...I sometimes think: 'Nature-tourists'!? Where are you during workdays?! Where are you in normal life!? You aren't here because your Xbox is more important and your TV. But on a public holiday people stroll around in nature and love it. "Oh, how beautiful this tree, look at this little fern...". It's not that I don't want them here, but I just feel that their love for nature is a bit fake.

(Gamekeeper, rural respondent 5)

Some 71 percent of all practitioners believed that caring for nature and looking after a piece of land throughout the year in all conditions, establishes a different depth of nature connection than recreational users experience, as they only consume and enjoy nature's beauty without caring for it in return. A gardener for example explained that he perceives a different connection with nature is evoked when people not only enjoy the sunshine or the blossoming flowers, but do the 'work' and cut the trees in autumn and prepare the garden for winter. He said:

I have to look after my garden, my flowers and nature throughout the year. I can't go on vacation in summer because I need to water the plants and make sure they are well. The same with my garden. Nature is also a responsibility and that is part of my relationship with it. I think that deepens the connection because it's an unconditional commitment.

(Gardener, rural respondent 10)

Another practitioner and expert from Nottuln also believed that looking after a piece of land entails a different quality of nature connection than visiting nature for recreational purposes. Nature tourism and nature recreation, she thinks, sometimes turns into a consumption of nature, which remains more superficial. She claimed that:

There are many levels or qualities of connection. Consuming a landscape or nature that others have created, with their sweat on their forehead, as respectful as it may be, it is a different form of connection. Tourists come, they enjoy it, and then they leave again. Comparing this to mountain farmers in the Dolomites; they have to stay all year around, in all conditions and difficulties – not just when the sun shines and the flowers bloom. And it is physically very hard work... those steep slopes etc. That is a different kind of connection.

(Rural practitioner 5)

Given that overall biodiversity and natural landscapes have irrevocably change in Germany, people's current inability to care and live within thriving biodiverse landscapes is limited, the expert from Nottuln stated:

For me this is what disconnection looks like: Not being able to awaken and maintaining life – not knowing how to do that anymore. Not even in your own

garden... Everyone says we need more biodiversity, but this is not possible if people don't know how to live within these landscapes anymore. That is the biggest contradiction for me and what I consider disconnection from nature.

(Rural practitioner 5)

Being connected to nature, having positive experiences, and being emotionally attached to nature, are not seen by the practitioners as sufficient enough to improve ecological wellbeing. These findings emphasise that the process of reconnecting people with actively caring for nature, such as loving nature, is essential to achieve effective environmental management and ecological integrity.

The inability to care for nature, however, was not just an individual problem but also a structural/societal issue. As over 70 percent of practitioners argued, the domination of *modern lifestyles* in urban as well as rural areas is the core driver that explains why most residents lack the time, as well as other resources, to care for nature. As fewer people have occupations that involve nature, nature-contact and caring for nature becomes limited to recreational times. Nonetheless, the majority of practitioners considered this critical, as a gardener, a respondent from Nottuln stated:

Being connected with nature means to be involved in the processes of nature throughout the year...It's like a natural participation...When all of this does not affect you anymore, you live a life quite separated from nature and that's what I understand as disconnected...sometimes I feel that is the reality for many people.

(Gardener, rural respondent)

The main problem was the reduction in people's ability to connect and look after nature in their recreational time, particularly for those less fortunate or not motivated to connect and care for nature. Any reconnection of people with nature in a meaningful way must reintegrate this aspect of active stewardship and caring into people's everyday life: transform it into an essential and important component of modern life.

A representative from a local authority in Nottuln mentioned that people's lifestyle and not their lack of interest was the main problem to make stewardship and caring for nature possible. He believed that the increasing occurrence of gravel gardens in Nottuln¹³ (refer Plate 5.2), demonstrated a bigger societal problem resulting in a disconnect from nature. For example, he saw people's inability to look after a garden, not only a personal choice

¹³ During the last years the amount of gravel gardens, especially in front yards, increased to 15 percent in Germany (BGL 2021).

but demonstrated a societal problem that has created a lifestyle in which there is no time to care for nature. He said that:

The wage policy in Germany has led to circumstances that both spouses work as they can't live from only one income anymore. This means there is less time available, and since people also have to keep the house clean, do groceries, look after the kids, there is not much time left to tend a front garden... Since people don't want to spend their only free time working in their gardens, they chose something which is easy to look after. That's the problem causing the increase in gravel gardens. It's not only because people think they're beautiful, but it's kind of born out of necessity.

(Rural practitioner 3)

Plate 5. 2: Gravel front gardens in Nottuln.



Source: © rural respondent 12

5.3.4 Disconnection as an alienation from the material side of nature

Almost two thirds of practitioners from both case study locations identified an alienation and separation from the material side of nature as a form of disconnection, arguing it drives unsustainable consumption.

Practitioners argued that residents in urban and rural areas enjoy a lifestyle with little or no contact with the processes of food production, which in turn disconnects and

separates people from their primal connection with nature. People do not use and perceive nature as a resource for food and commodities anymore. As one rural respondent, notably the farmer expressed:

Most people portray us farmers as the environmental evil although they have no idea how farming works anymore – not even in rural places like Nottuln. Of course, they don't have to know as they get everything from the supermarket. People are so removed from that, no one has their own veggie garden anymore. People enjoy being in nature, but really they can enjoy it because the shelves in the supermarkets are full. They forget that farmers are actually filling these shelves and that all of that needs to grow somewhere...

(Farmer, rural respondent 4)

People, even those living in rural areas, are reliant on supermarkets as they do not grow and produce their own food anymore. Practitioners were critical of the fact that people take for granted natural resources such as food and other commodities, as they are available and affordable in shops all year around. A practitioner and local politician from Nottuln also noted that there is an unrealistic understanding of primary production in the rural areas, He said:

We receive finished products such as the table, the piece of meat, and no longer have to deal with those things ourselves. People therefore have a very unrealistic understanding of how these things are produced and what that takes. I think that must be addressed. We need better communication, so residents understand where products come from and how they are produced.

(Rural practitioner 1)

This lack of understanding about food production, is also due to changes in people's occupations, and the transition from primary industry jobs to service sector ones. A practitioner from Nottuln noted, the significant decrease in acceptance and understanding of food production and said:

Many people in Nottuln used to work in agriculture and farming but this has long changed. Therefore, people have less acceptance when nature is used as farming areas or for animal stock and criticize that nature is mainly used for economical purposes.

(Rural practitioner 2)

The findings also show that practitioners said that with imported goods, people have a huge variety of exotic fruits and vegetables to choose from instead of being restricted to a local and seasonal diet. As one practitioner from Paderborn stated:

When you go into the supermarket you see all these perfect products and shiny fruits. Of course, they do not grow on trees. People are sometimes surprised to see

cucumbers not being straight or carrots in different shapes and colours. This shows that people really don't know what food looks like when it comes out of the earth.

(Urban practitioner 2)

A local politician from Nottuln mentioned how imported products increase emissions, but also convey the wrong impression what actually grows in Germany. He said:

I believe supermarkets convey a very wrong impression about food. All these exotic fruits and vegetables do not grow here but are imported. They come from all around the world...but nowadays it is normal to be able to eat pineapples or mangoes all year around and people expect to have such a choice. I believe that disconnects them from what actually grows here in Germany.

(Rural practitioner 2)

Practitioners hence believe that getting the food from big supermarkets detaches people from their local environment and portrays a misleading image of abundance and perfection as products in the supermarket look flawless.

The extent to which urban as well as rural residents disconnect from their food was especially obvious when discussing their meat consumption. This comment from a respondent, the gamekeeper from Nottuln, exemplifies this perspective. He said:

Most people are so disconnected from their food and don't want to see that some animals are killed to be eaten. I grew up like that. For me it was always natural to dissect an animal and eat its meat afterwards. Most people don't even want to be reminded that the meat they eat comes from an animal. For me that is disconnection, cognitive dissonance.

(Gamekeeper, rural respondent 5)

The analysis highlights the view of practitioners, that disconnection from the material side of nature is manifest on two levels. First, there is a *physical* disconnection and separation from nature as a provider, as very few people in rural or urban areas produce their own food. Secondly, people *consciously* distance themselves from using nature as a resource, as it is associated with environmental harm and destruction.

People's material disconnection from nature perceived as a separation from the user-side of nature, was also seen as neglect. Half of the practitioners argued that the active care and management of nature to enable a harvest, has vanished, as people do not see the need for it anymore. With less people worrying about food and other raw materials, the necessity and willingness to care and look after these things decreases the same way. The right balance of giving and taking from nature, practitioners believe, constitutes a healthy material connection with nature that most people even in the countryside have lost.

One practitioner, from the department of environmental protection, stated:

I think it is important to understand that you are allowed to 'damage' the environment, that you are allowed to cut down a tree and that you can also build a road. What is crucial is the balance! What do I do on the other side to make it sustainable? Planting a new tree for example. As long as that works, I can intervene and use nature's material. That is a healthy relationship. I don't have to chain myself to every tree as we need resources for our daily life. I do feel many people have lost this healthy balance.

(Rural practitioner 4)

A farmer from Nottuln also mentioned that looking after nature's wellbeing to harvest is the most important part often forgotten and neglected by people. He said:

Most of the times you look after nature and make sure everything is healthy and well... Taking care of nature is the main part of it! ... First, you care for nature and then you can harvest things such as crops or a delicious piece of meat. But most people only see the killing of hunting and consider this as cruel. For me that is very disconnected from what is natural and so detached from the natural cycle of caring and harvesting.

(Farmer, rural respondent 4)

Data analysis also highlighted there was disagreement among practitioners and residents regarding what constituted a 'sustainable' and 'appropriate' usage of natural resources.

A practitioner from the forestry office felt residents had become critical of "normal" wood cutting activities (refer Plate 5.3). He assumed this was due to their growing detachment from primary production and increased environmental concern. He said:

Lately in the forestry office we noticed that people starting to see normal cuttings of trees for wood use more critically. In my opinion we have communicated far too badly why we are doing this, why we are cutting down trees and using nature. On one side everyone likes a nice wooden table or a wooden house – which also makes sense, ecologically – but the wood has to come from somewhere. It won't come from heaven. Sometime people don't understand that.

(Rural practitioner 4)

Plate 5. 3: Wood logging around Nottuln.



Source: © rural respondent 10

Results, therefore, indicate that residential perception of what is appropriate re sustainable use of nature differed from practitioners' perception of how a healthy material connection with nature looks. This gap needs to be reconciled for improving sustainable consumption and resource production.

5.4 Summary

This chapter has presented the perceptions of both urban and rural respondents and practitioners about what constitutes nature disconnection. Respondents perceived nature disconnection as being a missing emotional bond with nature, as well as lacking attention and appreciation for nature. This was a reason given for disrespecting and ultimately destroying nature.

By contrast, the perception of practitioners about nature disconnection linked to how people behaved in nature and whether they exhibited any stewardship or commitment to care for it. Practitioners perceived nature disconnection for example, as a one-sided consumption of the beauty of nature without caring for its wellbeing. They also perceived

that disconnection was a detachment from the material side of nature and a lack of involvement in caring and harvesting from nature. Most practitioners assumed that a lack of knowledge, and awareness about nature and conservation was the main reason for environmental harm – albeit unintentional - not residents emotional disconnection from nature. Practitioners also believed that residents held misconceptions and misjudgements of what is beneficial for nature, and felt that nature conservation should not be driven by emotionally charged feelings about nature, that become divorced from interconnections within the ecosystem. The ways in which residents idealised and romanticised nature, therefore, was a disguised form of disconnection, one that *appears* as a love and appreciation for nature but is in fact manifest as an unrealistic and alienated understanding and perception of nature. The perception that residents are unable to care and look after nature, was seen as not just a personal choice but by societal/structural issues, such as changing lifestyles in which caring for nature is no longer a necessity.

6 WELLBEING

6.1 Introduction

This chapter examines the implications of the nature connection relationship for people's wellbeing in both case study areas and during the COVID-19 pandemic. It also outlines the implications of the nature connection relationship for ecological wellbeing in both case study areas.

6.2 Nature connection and wellbeing

The analysis based on the interviews undertaken with urban and rural respondents under the theme of 'wellbeing', which was an important topic at that time, reinforced by the lockdown restrictions of the COVID-19 pandemic. This research considers wellbeing as the state of feeling comfortable, healthy and happy. Wellbeing relates to the physical sensations of wellbeing; to feel healthy with little or no pain, but also relates to a psychological wellbeing and mental health to feel at ease, content and peaceful.

Highlights

- Positive effects on respondents' health and wellbeing were the biggest motivation for respondents to reconnect with nature in the urban and rural case studies.
- Findings demonstrate that nature is an important source for respondents to relax, recharge and cope with their anxiety about the uncertainty of the future during the COVID-19 pandemic.
- The COVID-19 pandemic created unique circumstances for respondents from both locations to slow down and take more time to appreciate nature and to explore their local area, and maintain their wellbeing.

The majority of urban as well as rural respondents claimed that they experienced an increase in their mental and physical health and wellbeing from being in nature. Around 90 percent of respondents stated they started to "feel better" after spending time in nature and 65 percent mentioned this helped clear their mind. A woman from Paderborn for example explained how walking through the fields after a long working day on her PhD helps her to let go of the stress:

Sometimes after working on my PhD, I feel so blocked and cannot think properly anymore. No inspirations, no ideas would then come to me, just confusion and anxiety how to write the next chapter. I then go and walk through the fields. Just seeing the vastness of the landscape helps me to clear my mind. I feel the wind and my mind can finally rest. Funny enough I had the best ideas on my walks as suddenly a good idea comes out of nowhere.

(Urban respondent 6, female, 37)

A 67-year-old woman from Paderborn also described how her body and mind now long for being in nature as she has internalised that this lifts her mood:

It is incredible what nature can do. Sometimes when I feel unwell, I know that being in nature always helps me to increase my mood. I am appreciating nature more and more for that.

(Urban respondent 12, female, 67)

Other respondents stated that the “clear mind” they received from being in nature enabled them to hear their inner self and connect with themselves in solitude. This made them feel calm and at peace with themselves. A 45-year-old woman from Paderborn explained how walking in nature became a therapy that helped her to make the right life decisions. She said:

Nature clears my mind. I've made a lot of important 'life-decisions' when I was alone in nature and just walked and walked and walked. Those were very special, even therapeutic, moments I had in nature. In those moments I can finally hear myself again. My mind rests. It is not for nothing that there are all these pilgrimage routes to come back to yourself. However, you don't have to make a pilgrimage to the Camino de Santiago to connect with yourself, you can do it on a small scale, just by yourself in nature.

(Urban respondent 8, female, 45)

Another 35-year-old woman respondent described how she knew on one of her walks in nature that she had to end her relationship as she realized how unhappy she was in it. She claimed that:

When I was travelling and would go for walks every day I finally had time to just be with myself and listen to my inner voice. Before I left I did not know that I wanted to end my relationship but on one long walk through the mountains I finally knew that I have to break up with my boyfriend. I was unhappy for a long time but I did not want to see it.

(Urban respondent 5, female, 35)

Being able to listen to one's own values and acting accordingly increased respondents' satisfaction and integrity with themselves. The rising numbers¹⁴ of pilgrimage routes

¹⁴ In 2015 18,859 Germans walked the Camino de Santiago trail. In 2019 this number increased to 26 167 (Camino 2022).

such as the Camino de Santiago trail demonstrate a growing quest to “come back to oneself” and emphasise that places, where people find their inner essence and connection with themselves, are in nature. In fact, growing numbers of yoga and meditation retreats in nature make use of the healing and connecting aspects of nature and hence epitomize this trend.

More than 65 percent of respondents also asserted that physical symptoms and diseases alleviated or even disappeared once they reintegrated nature back into their life. A 32-year-old rural respondent, for example, felt burned out after living a life detached from nature and changed his daily routine to be more in contact with nature and increase his physical and mental wellbeing. He said:

My own diagnosis was the separation from nature that triggered those stress symptoms in my body. They went away quickly, after I changed my lifestyle and said, ‘OK, I’ll go out more, engage with nature, built dams, walk barefoot, how I used to when I was a child. After that, the symptoms went away very quickly. Yes, I know I am ‘just’ 32 but now I know that I can’t live a life without nature anymore. That’s probably the reason why I am still living in Nottuln. I really need being close to nature for my wellbeing.

(Rural respondent 5, male, 32)

This rural respondent highlights the fact that living in a rural area helps to have regular contact with nature and that for him it erased his physical stress symptoms. Another man from Paderborn described how he had a constant tinnitus in his ear which disappeared when he goes into nature. He said:

I can feel how nature improves my health. I have this constant tinnitus sound in my ear throughout the day but when I am in nature it disappears. Then I think: Thank you for letting me listen to the rustling of the leaves for two or three hours. Nature is an element that heals.

(Urban respondent 9, male, 49)

More than 75 percent of all of respondents stated they regularly go for walks with close friends and family members, as being in nature enabled undisturbed conversations and provides a space for them to connect on a deeper level with others. As a 67-year-old woman from Paderborn stated:

The intensity of the experience I have in nature also depends on the people I am with. Going for a walk is the best way to have deep conversation with others as you somehow connect with them a different way. That makes me appreciate being in nature even more!

(Urban respondent 12, female, 67)

A 52-year-old male urban respondent, who owned a publishing company explained that he makes important business calls during his walks in the forest as he feels more focussed and perceptive. He said that there are:

... little nuances in conversations that I personally don't hear when I'm in the office. I hear that a lot more when I'm outside in the woods. Especially for business deals, connecting and responding appropriately is so important!

(Urban respondent 10, male, 52)

Being in nature not only deepened people's connection with nature but also strengthened their connection with themselves and other people. Feeling connected to other people and having deep and meaningful relationships with them increased respondents' perception of wellbeing. Listening to their own guidance and acting in accordance with their own values further also fostered respondents' satisfaction and contentment.

For the majority of urban and rural respondents, nature became a refuge and consolidating space where they were able to forget their stressful lives. Respondents claimed that being in nature rebalanced their hectic lifestyle, as nature was a space to recharge and relax, which increased their perception of wellbeing. A 49-year-old woman from Nottuln, explained:

Being connected to nature means that when you are under stress you then say, I am going into nature, I don't want to see any more people, I just want to go for a walk, just being in touch with nature. Looking at the trees and focus on them and not on other people or their talk, or whatever happens throughout your day. ...just seeing nature or just sitting and watching the sea. Being still and feeling connected with nature is nice for me. That is when I'm most grateful for nature!

(Rural respondent 8, female, 49)

Discovering nature as a place to rebalance and cope with the challenges of daily life deepened respondents' appreciation and bond with nature. This applied to 90 percent of urban and 75 percent of rural ones. The fact, that less rural respondents mentioned the need to rebalance their lifestyle was due to more respondents in that case study who had an occupation in nature. Rather than balancing their lifestyle by spending time in nature, the gardener and shepherd, for example, stated they were content to be protected from the cold or the rain and be able to "put their feet up" inside after a long working day.

The growing need to "rebalance" in nature, however, underlines a growing imbalance and separation of respondents' life from nature, even in the rural case study area. Most respondents tried to reintegrate nature into their leisure time, such as a 49-year-old businessman from Paderborn. Knowing and feeling the consequences of a life detached

from nature, he tried to compensate this loss through weekend trips in his canoe. During those times, being still, being alone and being in nature with no other sensual stimulations than natural sounds “heals” him, he stated:

I actually live a life quite detached from nature, and I know that this is not good for me – physically and mentally. Because of this dissonance, I sometimes really, urgently have to take my canoe and go onto the water... just by myself. To feel that nature and water embraces me.

(Urban respondent 9, male, 49)

Analysis showed that feeling a “dissonance” between what respondents longed for and how their life looked was a common issue and described by 50 percent of respondents. Stressful jobs and daily responsibilities limited respondents’ availability to enjoy nature. Increased wellbeing that people derived from nature, however, was the main reason identified by respondents to reorganise schedules and prioritise spending more time in nature.

For more than 70 percent of urban and rural respondents, the increase in wellbeing they received from being in nature was their biggest motivation to reconnect with nature.

Around half of the respondents said that they deliberately changed their lifestyle and reintegrated more time in nature once they discovered how their wellbeing increased, especially during phases of high distress such as during the COVID-19 lockdown period.

As a 22-year-old woman from Nottuln expressed:

During the COVID-19 lockdown restrictions I started to go for runs every day. It was so important for my mental health as I felt so overwhelmed by the uncertainty of the whole situation. Normally I would never run as often as I also don’t have time for that, but I hope I can maintain this routine as it is so beneficial for me.

(Rural respondent 2, female, 22)

A 49-year-old woman from Nottuln for example explained that once a week she schedules her clients a bit later to go bird watching with her partner. She said:

I am a pedicurist. Most of my days I am on the road with no time for nature. Since I know how much I need being in nature, I have started to join my partner on Wednesday mornings to go birdwatching and only see clients in the afternoon. That gives me energy for the whole week.

(Rural respondent 8, female, 49)

Another 38-year-old woman from Paderborn, who was a journalist, explained how she tries to integrate nature into her work life to be able to spend more time outside. She said:

At the moment I am working on a podcast and started to interview people while running in nature. Somehow, the combination of running and being in nature enables conversations that you normally would not have. They go very deep and nourish the soul. I think you have to be a bit creative and integrate nature in your daily routine wherever you can.

(Urban respondent 7, female, 38)

In the rural and urban case study location, respondents perceived that nature was a place to restore their psychological and physical wellbeing. Feeling connected with nature made them feel well, intact and balanced, which enhanced their appreciation for nature. Findings also showed that people's separation and disconnection from nature was often not a lack of interest or emotional disconnection, but primarily imposed by a lifestyle that leaves limited opportunities and possibilities to engage and experience nature. Although rural areas still display a slightly higher number of people who work with nature and have less need to balance this lifestyle, most of the rural respondents claimed their daily life was equally detached from nature than was the case for urban respondents.

6.3 The importance of nature during the COVID-19 pandemic

It was found that the COVID-19 pandemic did significantly impact respondents' relationship with nature and shaped modes of nature connections in urban and rural areas. More than 60 percent of respondents, across both case studies, for example, stated that the importance of being in nature increased during the COVID-19 pandemic. For almost all respondents, the pandemic caused a high amount of stress and affected their personal and professional life. A woman from Paderborn for example stated that:

Covid-19 has really turned my life upside down. I am self-employed and suddenly there is no more work for me...Being locked up inside all the time is also very stressful for me. I have two kids and now they have to attend online classes. This is very challenging especially for my youngest. This whole situation is just... very difficult!

(Urban respondent 7, female, 38)

The pandemic created unique circumstances for people to slow down and take more time to be mindful in nature. Due to that, more people found a refuge in nature; a source to relax, recharge and cope with their anxiety and future uncertainty.

For almost all respondents', nature provided a space where they felt less overwhelmed by the effects of the global pandemic. One 54-year-old female, a housewife from Nottuln, for example, explained that the lockdown restrictions encouraged her to go for walks more often and helped her to let go of her fear:

During this lockdown, I started to go for walks in nature every day. It helps me to stay calm and deal with the uncertainty of the current situation. When I am in nature, I can forget about it a little bit and I feel that all the craziness of the day finally stops.

(Rural respondent 9, female, 54)

During the interviews, nature was often described as a parallel world that could not be affected by the threatening events and restrictions people experienced in their daily life. For a 19-year-old resident from Nottuln, for example, nature became a refuge where none of the threatening news could reach him. For him, nature became a space where he could switch off and finally relax. He said:

People were more in nature as there was nothing else to do. But I guess for many it was a helpful opportunity to get a clear mind and calm down especially with all the scary news and updates you receive every day. Nature became suddenly a place where you are detached and feel far away from all this – at least this is how it felt for me personally.

(Rural respondent 1, male, 19)

Describing nature as an escape from ‘reality’, however, reaffirmed the impression that respondents ‘daily life’ and ‘nature’ were perceived as two separated places that exist independently from each other, which indicates most people’s separated lifestyle from nature.

In a similar way a 30-year-old woman from Nottuln described how being in nature counterbalances her overwhelming job at the hospital during the pandemic. Although she lives on a farm in the countryside, the stress caused by her lifestyle and the global pandemic, affected her wellbeing significantly and this is why she longed for the peacefulness she found in nature. She said:

Yes, I am still allowed to go to work. But when I come home, I take the dogs and go for a long walk as I often feel so overwhelmed, especially with this current situation and not knowing how life continues with COVID-19 and everything. Even waking up and seeing all the green out of our window makes me feel better as that is something steady and reassuring... Nature is always there and does not change that much. During the last years I realised how much I need and want nature in my life to feel good.

(Rural respondent 3, female, 30)

Knowing that nature does not change as drastically, compared to the world for people during COVID, reassured respondents that life continues, which made them feel more optimistic. The increased appreciation and gratitude for nature especially in challenging

times, increased respondent's connection to, and bond with nature in the rural as well as urban case studies.

Feeling emotionally connected with nature gave respondents strength but also relieved their feelings of loneliness and isolation. As a 45-year-old woman from Paderborn explained:

I don't have a partner and live on my own in my apartment. During this lockdown I felt very isolated and alone. Being in nature helped me to cope with that and I felt less lonely. When I am in nature I feel well and not isolated at all. Therefore, I would go for walks as often as possible to feel a connection.

(Urban respondent 8, female, 45)

Another student from Paderborn also described how he decided to spend the lockdown with his parents in the countryside to not be alone and have more nature around him. He said:

I went home to stay with my parents during the lockdown periods because I did not want to be alone in my small room in the shared apartment. I also wanted to have more nature around me and more possibilities to go for walks. I think I would have gone crazy being locked up here in Paderborn.

(Urban respondent 1, male, 24)

The lockdown restrictions also initiated a new trend to discover and explore people's "backyard", which also reconnected people with their local environment: Since many "distractions" and other leisure activities were unavailable during the lockdown periods, around 35 percent of respondents reported that the COVID-19 pandemic made them more familiar with their "backyard" given that other travel opportunities were restricted¹⁵.

A 19-year-old male from Nottuln stated that he was surprised about Germany's beautiful landscape when he was travelling around East Germany. He said:

I wanted to travel to the States but due to COVID-19 this had to be cancelled. I first thought my summer vacations are going to be boring, but my friends have a campervan and we travelled around East-Germany for summer vacations. I have never been to the East and I must admit it was really beautiful.

(Rural respondent 1, male, 19)

Another 38-year-old woman from Paderborn explained that during the lockdown restrictions she had less space to explore, which made her even more mindful and

¹⁵ One example that demonstrates this trend was the sales of E-bikes in Germany, which increased from 1.36 mio in 2019 to 2 millions sold bikes in 2020 as most people wanted to avoid public transport and explore the local area.

appreciative of nature. Feeling more connected to her local environment increased her sense of belonging and wellbeing. She said:

During this ongoing lockdown I go for walks or runs every day. Otherwise, you go crazy sitting at home all day long. Funny enough I have explored so many new paths and areas in and around Paderborn that I had no idea existed. I feel a lot more connected to the environment here in Paderborn now. Before I would travel to other countries to see more spectacular nature. I have realized that Germany has a lot of beautiful nature too and exploring my surroundings has given me a lot of joy.

(Urban respondent 7, female, 38)

The unique situation of not being able to travel and mainly working from home also allowed people to deepen their bond with local nature in Paderborn and Nottuln, and respondents appreciated little details a lot more. A man from Paderborn, explained that he found beauty and uniqueness in a water barrier, he never noticed before at the Paderlake (refer Plate 6.1). He stated that:

Sometimes I come here and just watch how the water goes by. That calms me and lifts my spirit when I am overwhelmed with fear.

(Urban respondent 10, male, 52)

Plate 6. 1: Water barrier of the Paderlake near Paderborn.



Source: © Urban respondent 10.

Findings thus highlight that feeling emotionally connected with nature was also fundamental for urban as well as rural respondents' emotional and physical wellbeing. Nature helped respondents to cope with the physical and mental challenges of the COVID-19 pandemic and with feelings of isolation, loneliness and fear that overwhelmed them during the lockdown periods in both rural as well as urban areas. Nature provided a space

where they could forget about the threatening reality, and finally switch off. In nature, it seemed, the world was still in order and not in chaos and uncertainty as were other parts of respondents' lives. This gave them reassurance, hope and consolidation to feel emotionally connected and well, for at least the time being in nature. This demonstrates the importance of emotional connection with nature for people's physical and mental wellbeing.

Local authorities, especially in the urban area, were aware of the importance of green space for people's health and wellbeing, particularly during the COVID-19 pandemic. A practitioner and local politician from Paderborn for example noted:

Last week, we counted the people who go for runs or walks around the Paderlake. This number has significantly increased during the lockdowns although it was rainy and snowed as well. This clearly shows how much people appreciate the nature we have here in Paderborn and how important it is to provide green space.

(Urban practitioner 1)

Another local politician stated that he believed that this trend was only temporary and when everything got back to normal people will spend less time in nature and continue their usual less sustainable lifestyle. He claimed:

I don't think that this trend will last. When everything opens up again people will continue their usual routine, go shopping and all these things and spend less time in nature. Now everyone comments on how important nature is, how clear the sky finally looks like without planes, and argues that we should continue living like this. Not flying and not wasting so many resources is of course a lot better for the environment. But the moment people are able to fly again, they will. People will not change their behaviour.

(Urban practitioner 3)

Representatives from urban planning, however, stated that the importance of nature in cities is necessary for city development and new housing areas. One urban practitioner said:

In urban planning we have to consider and integrate more and more green spaces, parks and other open areas. We must do that because things have changed... COVID-19 reminded people how important nature and green space especially in urban areas is. New building projects will combine parklands with urban living to create living space of high quality.

(Urban practitioner 4)

Another urban practitioner, however, also stated that space in Paderborn is limited, and they cannot just turn housing areas into natural parklands but rather improve the available space and increase its attractiveness. Other local politicians confirmed that

their political agenda is increasingly shaped by the need to prioritise nature and green space in Paderborn in order to enhance residential wellbeing, which the COVID-19 pandemic has reinforced.

6.4 Nature connection and ecological wellbeing

The last section of this chapter presents results from the analysis relating to pro-environmental behaviour and ecological wellbeing. In this context, ecological wellbeing is that which relates to the physical environment, including a healthy biodiversity and ecosystem integrity.

Highlights

- Analysis found that nature connection did not increase ecological wellbeing as it did not increase pro-environmental behaviour beyond recycling or reducing plastic use.
- The high number of respondents who tried to reduce their ecological footprint demonstrated a growing environmental awareness and concern in both case study areas.

Researchers (Kals et al. 1999; Mayer & Frantz 2004; Nisbet et al. 2009; Schuttler et al 2018) have argued that the nature-connection fosters pro-environmental behaviour, and it is assumed to increase people's commitment to care for nature.

Although urban and rural respondents considered themselves as closely connected to nature, there appeared to be no strong commitment to increase ecological wellbeing. As displayed in Table 6.1 respondents were asked about their engagement in three different forms of pro-environmental behaviour. Only 16 percent of respondents in urban and 25 percent in rural locations were involved/or had been involved in environmental projects or nature conservation projects. None of the urban respondents were politically active and only 16 percent of rural respondents were part of the green party or part of political activism such as Fridays for Future. The majority of rural and urban respondents, however, stated they do small pro-environmental actions; 92 percent of urban respondents and 75 percent of rural respondents asserted they try to reduce plastic use, ride their bike more often, and/or recycle their rubbish. A further 16 percent of urban respondents and 58 percent of rural respondents also stated that they look after their garden and 'cared'

for nature in that way. This ‘caring’ varied from mowing the lawn to increasing biodiversity and/or having a vegetable garden.

Table 6. 1: Respondents engagement in different forms of pro-environmental behaviour.

Forms of pro-environmental behaviour	Urban respondents	Rural respondents
Engagement in environmental and/or nature conservation projects	16 percent	25 percent
Engagement in political activism and/or a green political party	-	16 percent
Small pro-environmental actions such as reducing plastic, bike riding, recycling etc.	92 percent	75 percent

As Table 6.1 shows, attempts to mitigate respondents’ ecological footprint was the most common form of pro-environmental behaviour. Although 80 percent of respondents believed that there is a relationship between nature connection and pro-environmental behaviour only a few people committed to a nature conservation project, environmental initiative, or engaged in political activism. Respondents noted that the process of reducing environmental harm conveyed a feeling of having a sustainable lifestyle, as this quote from a 37-year-old woman from Nottuln exemplifies:

Yes, I consider myself as environmentally conscious and I act accordingly. I try to buy less plastic and take the bike when I go to the shops to do groceries.

(Rural respondent 6, female, 37)

Another 29-year-old man from Paderborn had a similar perception and considered his lifestyle environmentally friendly. He said:

I consider my lifestyle as environmentally friendly. I don’t have a car and walk everywhere or take the bus. I also buy my food on the market here in Paderborn and bring my basket to reduce plastic bags.

(Urban respondent 3, male, 29)

Although nature connection did not necessarily motivate and encourage people to become more active in conservation projects or political activism, particularly in the urban case study, the desire to reduce their ecological footprint demonstrated a growing environmental concern and awareness in both case studies. In fact, 92 percent of respondents expressed environmental concern and worries regarding the current state of nature. A 62-year-old woman from Nottuln for example stated:

I am very concerned about the environment. It thinks it gets worse and worse every year. This summer was very dry, all my plants and the apple tree in my garden died. Politicians do not take it serious enough, and when I see that everything that once was a meadow is now built environment, which makes me very sad.

(Rural respondent 11, female, 62)

Some respondents were rather discouraged about the constant bad news and felt confused about how to behave sustainably. As reported by an urban female aged 45 who said:

I think it is out of question that the environment and our climate is in danger, we hear this all the time on the news. I am concerned about the environment, but you get all these mixed messages that you should buy this, or do that, and 5 years later they say something else. I have heard that solar panels are bad for the environment as the waste cannot be recycled properly, or that biofuel is also harmful. I really don't know what to believe anymore.

(Urban respondent 8, female, 45)

Other respondents were concerned but still hopeful that development and innovations could save the environmental crisis, as one 42-year-old man from Nottuln stated:

I am not an expert but there are so many smart people and innovations nowadays. My hope is that progress and technology will help us find solutions to solve issues like polluted water or plastic in the ocean. I saw they have now these machines that filter plastic out of the ocean. Of course, this is not the solution, but I think these paths should be pursued.

(Rural respondent 7, male, 42)

A 31-year-old farmer was also concerned about the environment but felt angry that farming does not receive enough financial support from the government to make sustainable farming possible. He said:

I wish I could do more for nature because I see all the environmental destructions...I also want to have less animals or more fallow land and flower strips for insects and other small animals. But I am financially pressured and also need to make sure I earn enough money to continue doing my job... The government has all these new regulations how to make farming more sustainable but really, they don't give us enough financial support to implement these things, building bigger boxes, or using less manure. Every 10 years politicians demand different things, and we have to adjust our whole farming concept accordingly. That's insane and shows that politicians have no idea.

(Rural respondent 4, male, 31)

The overall growing environmental concern among urban and rural respondents was also visible during the last elections in 2020 and 2021. Voting green has significantly increased from 10 percent in 2014 to 19.5 percent in 2020 in Nottuln (Gemeinde Nottuln 2020), and from 14.4 percent (2014) to 24 percent (2020) in Paderborn (Stadt Paderborn 2020). For

the parliamentary election in 2021 the green party received 14.9 percent of the vote, which was 5.9 percent more than in 2017, and made them the third strongest party (The Federal Returning Officer 2021).

These trends support the finding that nature connection increases environmental awareness and concern. As shown in the analysis, environmental concern, however, does not necessarily result in environmental actions that go beyond recycling or reducing plastic. Findings indicate that nature connection may increase environmental concern and uncomplicated pro-environmental actions such as recycling or taking the bike more often, but does not increase pro-environmental behaviour requiring more commitment.

The low participation by respondents in conservation projects relates to the fact that 63 percent of respondents did not see a need for nature-conservation activities, as they understood environmental protection as a process of stopping human interference. For 42 percent of respondents, humans were harmful and destructive for nature and were not caretakers. One urban man from Paderborn aged 24 said that:

To be honest, I think humans are parasites, which are harmful and destructive for nature. If there were no humans, nature would be better off. But of course, who wants that...

(Urban respondent 1, male, 24)

Another 54-year-old woman from Paderborn, also thought nature should be left alone for it to thrive and develop healthily. She claimed that:

In my opinion we should leave nature alone... It is arrogant to think that nature needs us. Nature does not need humans. We always interfere with it and destroy it. That must stop for protecting the environment...Nature can heal itself just on its own.

(Rural respondent 9, female, 54)

The lower engagement of urban respondents in conservation projects and political activism linked to the fact 75 percent of urban respondents asserted they did not know about any local environmental or nature-conservation initiatives. Therefore, it is not surprising that none of the urban respondents participated in nature conservation projects, like nature-based citizen sciences, or in other civic ecological practises such as urban gardening or other (urban) greening projects. As a man from Paderborn explained:

I don't know any nature conservation projects here in Paderborn. I also think people do not really have time to look after a garden especially if it's not in front of their door. At least I would not have time to do that. I do like the idea of citizen-

science, although I have not heard about it. This could be fun but to me that's it sounds more like a children's activity.

(Urban respondent 10, male, 52)

Overall, 58 percent of urban respondents asserted they liked the idea of urban gardens, but never engaged with them because they did not know they existed in Paderborn. A quarter of respondents liked the idea but did not find it useful and relevant for them. It was interesting that only 8 percent of respondents had never heard of the concept, while a further 8 percent had a rather negative opinion about those practises because they had observed urban gardens being neglected. A 35-year-old woman from Paderborn, for example, remembered and expressed:

I think people tried to put up some vegetable boxes in the Riemeke park once, but after a few months they all looked so messy and rotten because nobody felt responsible for it. It is similar to the shared gardens behind apartment blocks. No one feels responsible for them, so they often look bad, or a gardener has to come.

(Urban respondent 5, female, 35)

Findings indicate that individual's nature connection is unlikely to lead to a behavioural change, which noticeably improves biodiversity and nature's health, particularly when the living environment provides few opportunities to become active and engage in environmental projects.

Practitioners, however, did not feel it was their role to engage people in nature conservation, as they perceived it as people's own responsibility. Practitioners from Paderborn for example were negative about urban gardening and reported that residents had requested and set up garden boxes, but noted they had to remove them due to neglect. As a representative from urban planning from Paderborn stated:

Please do not mention urban gardening... The last time we tried this people went on vacations, or university started again, and then they did not look after these gardens anymore, or they had other priorities. In the end we had to remove them because they looked so messy.

(Urban practitioner 4)

Another practitioner and representative from the department for environmental protection and green space in Paderborn explained why he considered these projects as pointless:

Whether you plant your radish in a 3-meter box or you have your own garden, the problem is the same. People have no idea about nature anymore and don't want to care and look after it long-term.

(Urban practitioner 5)

Lack of long-term commitment was a major barrier for local stewardship to occur and caring for nature to be successful.

Local politicians saw more need to create opportunities for people to engage in nature conservation, but often aimed these initiatives towards children or left the engagement up to respondents' own motivations. One urban practitioner said:

Once a year we plant trees with children to establish their love for nature and show our commitment for climate change and environmental protection... I also have my personal beehive near the graveyard in the city centre. People know how important nature is to me. I want to act as a role model so people are inspired and follow this example.

(Urban practitioner 1)

In the rural case study, practitioners also counted on respondents' own motivation to 'do' something for nature conservation and again felt less responsible for providing opportunities for them, as expressed by one of them:

People always complain about environmental destruction. On the other hand, they do not become active to change that themselves. For me that shows a lack of commitment to improve ecological wellbeing because complaining and pointing out difficulties is easy.

(Rural practitioner 2)

Nonetheless, politicians from Nottuln did support requests to rebuild and design the parklands, and directed their regional planning towards protecting the climate and reducing environmental impact. One said:

Respondents have requested to reshape the Rhode Park, which I am supporting. We are in close contact with environmental groups to re-design the park to increase its biodiversity and make it more attractive for respondents... We are also thinking about new living projects to solve the problem of expanding settlements. We can't continue living in big houses on our own. Here in the countryside, we have to consider that space is limited, too.

(Rural practitioner 1)

Findings therefore show that decision makers from both case study areas were rather hesitant and reluctant to start projects and initiatives for respondents to engage in nature conservation or local stewardship, mainly because they did not feel responsible for it, particularly for the engagement of adults. In fact, the involvement of residents of Nottuln and Paderborn in nature conservation mainly rested on individuals' motivation and commitment to become active.

6.5 Summary

This chapter presented findings of the nature connection relationship necessary for respondents' wellbeing in both case study areas, particularly during the COVID-19 pandemic. Findings show that the increase in respondents' health and wellbeing intensified their appreciation and strengthened their bond with nature, which became even more relevant during the COVID-19 pandemic. The positive effects on respondents' health and wellbeing were the biggest motivation for people to reconnect with nature in both case study locations. The COVID-19 pandemic created unique circumstances for respondents to slow down and take more time to appreciate nature and explore their local area, and maintain their wellbeing. Findings demonstrate that nature is an important source for respondents from the urban as well as rural area to relax, recharge and cope with their anxiety about the uncertainty of the future during the COVID-19 pandemic. The results highlight that feeling emotionally connected with nature is also fundamental for people's emotional and physical wellbeing.

The second section of this chapter presented the implications of nature connection for ecological wellbeing. Analysis shows that nature connection did not increase pro-environmental behaviour beyond recycling or reducing plastic use in the case study areas, and, therefore, was not enough to stop environmental destruction and climate change. The high number of respondents who tried to reduce their ecological footprint, however, demonstrates a growing environmental awareness and concern in both case study areas. Practitioners, however, felt less responsible for offering initiatives for local stewardship or other conservation initiatives to occur, therefore it is up to respondents' own motivation and commitment to become active and engage in environmental projects.

7 DISCUSSION

7.1 Introduction

This chapter discusses the significance of the key findings for understanding the human-nature relationship and moving forward to make future recommendations. The purpose of this study was to explore the depth and breadth of nature connections and disconnections across urban and rural settings. The aim is to develop a new understanding and framework for nature connection and disconnection in urban and rural areas in Germany.

7.2 The human-nature relationship in rural and urban areas

The first section discusses findings from this study regarding modes of nature connection and disconnection in the rural and urban case study locations.

7.2.1 People in cities are not less connected to nature

This study began with the assumption that, as the literature suggests, there would be a difference in the human-nature connection between urban and rural residents. This research, however, demonstrated that people who live in both urban and rural areas throughout their life now predominantly follow an urban lifestyle.

Echoing previous findings and assumptions (Matz et al. 2015; Wang et al. 2019), urban respondents were found to spend less time in nature, which limits residents direct contact and experience with nature (Loebach & Gilliland 2014; Soga & Gaston 2016). This research, however, did not find a decrease in people's emotional connection and affiliation with nature due to their urban lifestyle as found by other scholars (compare Kals et al. 1999; Miller 2005; Schuttler et al. 2018). In fact, all respondents, regardless of where they lived, showed high levels of emotional attachment and interest in nature and expressed appreciation and attention for it on different levels. Due to the qualitative nature of the research, respondents' emotional connection and appreciation for nature could be validated and deeper explored. Findings from both case study areas indicate that once a certain affiliation and connection with nature is established, people do not always directly experience nature, but remind themselves of their nature connection through indirect experiences. Periods where nature was absent in people's life due to external

circumstances such as moving to a city or living abroad could even enhance and increase people's awareness and attention for nature – qualities that were found to increase people's appreciation and bond with nature (Halpenny 2010; Ramkisson et al. 2012; Tonge et al. 2015; Citton 2017).

Physical separation and/or limited access to nature are not necessary preconditions for the lack of a human-nature relationship as found by other scholars (e.g Lacoëuilhe et al. 2017). This study indicated that separation can also remind people of how much they need nature in their life and initiate a conscious change in priorities. This is most important as it suggests that urban areas are not necessarily places where people's nature connection atrophy, at least for the chosen case studies in North Rhine-Westphalia. This negates the assumption that urbanisation disconnects people from nature and reduces their emotional affiliation with it (Pett et al. 2016; Cox et al. 2018; Schuttler et al. 2018). The implication of this finding is that along the rural-urban continuum alienation and separation from nature can happen as much in rural areas as in urban, when nature does not play an essential role in people's life anymore in either area.

The current focus on counteracting a growing alienation and separation from nature is on reconnecting people with nature in urban areas, by greening cities and increasing individual nature experiences (Haaland & van den Bosch 2015; Haase et al. 2017). This project shows that respondents from both living environments were emotionally connected to nature and spend time in it to increase their health and wellbeing. However, there is a pressing need for more opportunities and better approaches to reconnect people with nature conservation and caring in North Rhine-Westphalia. This is important for urban areas but also for rural ones as respondents there were also following a modern lifestyle.

A greater focus on reconnecting people with nature and conservation in rural areas is even more important given the COVID-19 pandemic modified people's living preferences and made rural areas more attractive. In fact, studies conducted in Germany demonstrate that more people are moving back to suburban and rural areas due to the high living costs of cities and the challenge of having limited space and access to nature (Stawatz et al. 2021). Confirming the findings from this research, another study found that the COVID-19 pandemic increased the importance of green space and people's own garden (Dolls & Mehles 2021), whereas bigger cities are becoming less attractive for people. A representative study conducted in 2021 showed that 13 percent out of 18000 surveyed respondents from bigger cities with over 500,000 residents, asserted a desire to move out

of the city within the next year. Almost half of them named the COVID-19 pandemic as a reason for this decision (Dolls & Mehles 2021).

What this means is that although urbanisation continues to be a global trend, especially in developing countries, highly developed countries such as Germany with a high population density and good infrastructure, may experience a reversal of this trend, with people moving back to smaller cities and rural areas. Further, due to the current economic crisis and the Ukraine conflict in Europe, urban life has become unaffordable for many people as living costs have risen unexpectedly (Glucroft 2022). Due to the new flexibility allowing work from home, rural living is regaining its appeal, and has started to alleviate the exodus of young people to metropolis (Stawatz et al. 2021). The German Government is also encouraging regional development by installing high-speed internet in rural areas to make them more attractive for business and industries. In the municipal Nottuln, for example, 75 percent of its area has now been connected to high-speed internet (Bruehmann 2022).

Given these developments, and reinforced by the COVID-19 pandemic, decision makers and urban planners are now under pressure to pay greater attention to suburban and rural areas to reconnect people with nature and conservation practices. This focus on rural and suburban areas is not only important for Germany but for many other highly developed countries where most people follow a modern urban lifestyle such as in France, the United Kingdom or Spain. Reconnecting people with the practice of caring for nature in rural and suburban areas has received less attention and needs more support to foster sustainable development, particularly for people from lower socioeconomic backgrounds.

7.2.2 The importance of positive childhood experiences in nature

Findings from the case studies suggest that respondents' relationship with nature is based on a stable emotional connection and occurs with different degrees of contact and engagement with nature, depending on life stage and lifestyle. Positive childhood experiences with nature are most important for the human-nature relationship as those experiences establish a stable emotional bond that encourages people to reconnect with nature, which reaffirms previous studies (Hatfield and Rapson 1993; Chawla 1999; Dunn 2006; Soga et al. 2015; Schuttler et al. 2018).

Understanding the human-nature relationship as a dynamic process with different modes of reconnection and disconnections that constitute this relationship, offers a new

understanding and perspective on the so-called “crises in consciousness” (Pyle 2003, Zylstra et al. 2014). Given the growing concerns about people’s overall disconnection from nature particularly in urban areas (Randerson 2015; Schuttler et al. 2018), these findings encourage us to consider the possibility of a broader perspective and more holistic understanding of the human-nature relationship as people experience different qualities of nature connection throughout their life, whether living in the city or a rural area. This means that even if people do not experience nature regularly during certain periods of their life, due to limited access or physical separation, their emotional bond remains intact.

The fact that almost all respondents from both the rural and urban case studies and across various age groups, mentioned the importance of nature during their childhood is a promising development that alleviates concerns about a growing “nature-deficit-disorder” (Louv 2005; 2010) in Germany. The interest and popularity of alternative nature-based kinder gardens and primary schools in Germany also reflects a growing awareness of the importance of nature for children’s development (BVNW 2022). Forest schools, for examples, have started to incorporate caring for nature into their curriculum (Jax et al. 2018) so children engage and look after nature daily. Although the overall decrease in children’s opportunity to free play is undeniable (Pyle 1993; Kellert 2013), parents nonetheless seem to be aware that nature-based-experiences are fundamental for their children’s wellbeing, seen in their willingness to adapt their living environment accordingly¹⁶.

To ensure that more children establish an emotional bond and connection with nature regardless of their socioeconomic/cultural background, kindergartens and schools should incorporate more nature-based activities and education as well as caring for nature into their curriculum.

7.2.3 Mindfulness and wilderness experiences are drivers of nature-connections

This study also demonstrated that the majority of urban and rural respondents are open to and mindful of nature and experience a deeper sense of nature connection when they are given the time and space to cultivate an “ecology of attention” (Citton 2017). As with Martin et al.’s study (2020), this project found that incidental contact with nature and green spaces in people’s neighbourhood was less definitive and relevant for people’s

¹⁶ The majority of residents grow up in a rural area with regular nature contact and a garden.

perception of nature connection as assumed by scholars such as Beery et al. (2017). Residents' intentional contact with nature was more important as people deliberately took the time to pay attention and mindfully experience nature. The so called "inattention-nature-blindness" (Pyle 2003; Zylstra et al. 2014), that the distractions of urban areas may evoke (Shwartz et al. 2014; Soga & Gaston 2016; Stokols 2018), is therefore only partly valid as these findings show that cities do not distract and disconnect people permanently from nature. In fact, once respondents felt safe to drop their "filter", they become open and receptive of nature again and could perceive the subtle sensual stimulations of nature. This indicates that undisturbed quality time in nature is more important for people's nature connection than increased green space and incidental contact with nature in cities.

In this study, the richness and complexity of an ecosystem was a decisive factor that encouraged people to encompass a state of "openness to experience" nature, which aligns with findings from former studies (Tam 2013; Silvia et al. 2015). These findings emphasise that there is a need for more spaces where people can experience nature mindfully with all senses. Previous research showed that urban manicured nature evokes pleasant feelings of relaxation and restoration and remind people of their nature connection (Korpella 2001; Hartig & Staats 2006). The fact that most residents in this project, however, felt disturbed by the presence of other people when trying to fully connect with nature corresponds with a study by Lengieza and Swim (2021), which found that isolated places create positive effects of nature connections. Scholars (Van den Berg & Ter Heijne 2005) have previously argued that manicured nature, such as urban green space, may in fact *distance* visitors from nature to the extent that a deeper sense of nature connection does not occur anymore.

Findings from this research highlights the importance of providing opportunities for nature experiences in rich ecosystems or "wilderness" areas, as they are beneficial and necessary for people to experience a deeper sense of nature connection. However, urban nature and manicured environments should not be the only way people experience nature as these places do not provide the same intensity of nature connection and personal growth. Better access to local recreational areas and national parks and/or conservation areas close by, is therefore essential for urban as well as rural residents and need more attention in urban planning and decision making. It is, however, important that a nature connection is established beforehand, as wilder landscapes that lack structures can evoke

fear and negatively overwhelm people with less connection to nature (Kaplan & Kaplan 1989; Andrew & Gatersleben 2013).

The development and integration of “novel urban wilderness” into green infrastructure programs such as industrial sites, is a promising approach used to connect people with more diverse and wild nature in cities (Kowarik 2021). Urban wilderness is beneficial for biodiversity conservation when applied to many unused spaces. Global campaigns such as ‘Wild Cities’ and the ‘National Park City Foundation’ are examples of attempts to reconnect urban societies with a wilder, more diverse natural environment (Metta & Olivetti 2021; Wong 2021). Those approaches, however, have just started and do not incorporate smaller cities or rural areas in their models yet, but such areas would equally benefit from wilder and more diverse nature. Those initiatives have great potential so long as they do not become meaningless labels, but change the way cities integrate diverse nature and combine them with urban living.

7.2.4 Strengthening people’s material connection with nature

Ives et al.’s literature review (2017) identified a research gap on people’s material connections with nature and its interplay with other internal connections. Understanding this interplay, they argued, is helpful for us to understand and improve interventions for sustainability on a broader level.

Despite people’s emotional connection with nature, this study showed that urban as well as rural residents are equally alienated from the material side of nature. As Sussmann (2022 p.62) noticed “consumers are able to go about their lives more freely because the convoluted supply chain maintains a disconnection from their impacts”. Only few respondents produced their own food or had a vegetable garden. Nature disconnection was therefore found to be a cognitive as well as physical alienation and separation from the material side of nature, which includes a realistic understanding what it takes to produce certain things. This fuels an unsustainable consumption, as people are disconnected from the environmental impact of their material (over)consumption.

Currently, Germany’s overshoot day¹⁷ 4th of May 2022 (Overshootday 2022), meant that people used more resources than nature can provide for the year, somewhat earlier than.

¹⁷ A country’s overshoot day is the date on which Earth Overshoot Day would fall if all of humanity consumed like the people in this country.

the earth overshoot day¹⁸ in 2021 was July 29. The national footprint of Germany is higher than the average footprint of the earth. The growing demand for more environmentally friendly solutions and greener production that often comes from (urban) residents is a positive development that demonstrates growing environmental awareness among citizens. People's overall lifestyle however does not seem to match this awareness, as statistics show that in 2019, only 6.4 percent of all food consumption in Germany was classified as environmentally friendly/organic, despite people's overall belief to buy and support "green" (Foodwatch 2021).

This rising over-consumption of resources demonstrates that growing environmental awareness and 'greener' consumption does not solve the ecological crisis. In fact, greenwashing marketing strategies often convey a false impression of sustainability, although they only mitigate environmental harm without ending the cause of the problem. Based on misleading promises, consumers get a false impression that their lifestyle is justifiable and even sustainable. There is an urgent need for stricter rules regarding product labelling and marketing. Campaigns in both rural and urban areas that explain where products come from and who produces those goods would also be beneficial.

This study also highlights that the definition of a 'normal' and 'appropriate' usage of natural resources differed among governmental institutions and practitioners, as well as urban and rural residents. Conflicting opinions about a 'sustainable' use of nature also gained political attention. In 2019 and 2020 disagreements between agriculture and (urban) consumers caused protests and conflicts in Germany, as thousands of farmers drove their tractors to the parliament in Berlin to protest against the new agricultural manure regulations. Farmers wanted to become visible especially in urban areas to show that the growing demand of urban residents and politicians for more sustainable agriculture, are not feasible if people are not willing to pay higher prices for agricultural commodities.

Reconnecting people with the material side of nature requires fresh conversations and discussions about what sustainability and caretaking means in the German context. Since most people are detached and separated from those aspects, it may be difficult to evaluate what a sustainable usage of resources in Germany looks like, and how a realistic reduction

¹⁸ Earth Overshoot Day marks the date when humanity's demand for ecological resources and services in a given year exceeds what Earth can regenerate in that year.

of Germany's ecological footprint is achievable when many people have little understanding how to sustainably meet a growing demand for resources.

Therefore, strengthening local production such as farmer markets and supporting small-scale farming would help to reconnect residents with (sustainable) food production, and enable them to participate in them. Participatory collective farming, a practice used to reverse homogeneous industrial agriculture and to reconnect people with food production and small-scale farming, has been a recent development in the European context (Pérez-Ramírez et al. 2021). Studies show that fostering such collective agro-ecological practices encourage agrarian landscape stewardship and environmentally friendly behaviour, especially among women (García-Llorente et al. 2019; Manlosa et al. 2019).

7.3 Improving ecological wellbeing

The following section discusses the implications of nature connection and disconnection for pro-environmental behaviour and ecological wellbeing.

7.3.1 Nature connection does not initiate behavioural change

Although emotional affinity is the foundation from where a sense and commitment to protect nature can develop (Kals 1999; Meyer & Frantz 2004; Schuttler et al. 2018), this study did not find nature connection as a strong indicator to increase pro-environmental actions that go beyond recycling or reducing plastic. Nature connection more strongly correlates with environmental concern, which other studies have stated before (Schultz 2002; Ramkisson et al. 2012; Tonge et al. 2015), but does not noticeably encourage environmental actions that require more commitment. This study argues that better communication and awareness is needed as recycling or using less plastic is not enough to stop climate change and environmental destruction: more is needed. Moreover, sustainable consumption cannot rely on individual awareness and commitment to buy and use natural resources responsibly, but should be regulated and controlled by the government through stricter environmental policies and clearer communication. As Sussmann (2022 p.62) states there are "misconceptions that 'green' choices can compensate for unsustainable ones", which means that people think that reducing plastic use or by recycling their rubbish gives them mental permission for harmful acts such as flying more often. Stricter rules regarding product labelling and marketing should be enforced to avoid 'green washing' and confusion.

In this study, high emotional connection dominated urban and rural respondents' relationship with nature, rather than a great knowledge about nature, especially about their local environment. In contrast to previous assumptions (Turner et al. 2004, Pett et al. 2016; Schuttler et al. 2018), these findings demonstrate that disconnection from nature is not manifested as a missing emotional bond, but rather is an alienation, manifested as a lack of knowledge and awareness about how to behave in alignment with nature and to take care of it. Finding a way to engage and interact with nature so humans as well as nature thrives, is at the heart of what needs to be pursued with people's relationship with nature.

Confirming Schultz's (2002) critique, this lack of understanding towards nature often results in unrealistic and romanticised ideas of nature driven by people's desire to help. As Jax et al. (2018 p. 26) stated:

Regarding conservation practise, the fact that certain people care for certain elements of nature will not per se lead to 'more' or 'better' conservation.

In fact, nature-protection is often fuelled by emotional division, without understanding its interconnection within an ecosystem. This emotional division of hierarchical categories worthy of protection indicates an underlying anthropocentric outlook (Schroeter et al. 2014; Silvertown 2015), and is not beneficial for conservation purposes. These findings upset the assumption that the restoration of people's emotional affinity with nature solves the environmental crisis (Kals et al. 1999; Mayer & Frantz 2004; Nisbet et al. 2009).

Taking Ives et al. (2018) five dimensions of human-nature connections and the hypothesised mechanisms by which interventions for reconnecting people with nature change the system into consideration, the results from my case studies hence suggest a modification regarding the urbanized countries such as Germany.

In Ives et al.'s (2018) hypothesis, the material and experiential dimension of the human-nature connection are described as more shallow outer connections that do not account for many leverage points. The cognitive dimension of the human-nature relationship is placed in the middle, followed by inner human-nature connections, such as the emotional and philosophical dimensions. Those inner human-nature connections are ascribed a greater amount of leverage points than outer, which means they are thought to have a greater impact to change the system towards suitability. Regarding my findings, I argue that this should be reordered as all respondents were found to be emotionally connected to nature but did not necessarily behave more environmentally friendly due to that.

First, I argue that in an urbanized and modern country such as Germany, more importance should be placed on outer human-nature connections such as healthy material and experiential human-nature dimension. Outer connections such as people's material and experiential connections shape how people physically interact with nature and how they use its resources. Transforming people interaction with nature and their material consumption into more sustainable ways would have greater impact on environmental health in Germany, than fostering more emotional connection to nature. As Buch (2015 p.279) explains, caring involves an "affective concern (caring for)" but also "practical actions (caring about)". In this study, caring was mainly expressed as a concern or caring *at a distance* to mitigate peoples harm, and less enacted as practical actions. Humans, however, have altered and changed the ecological system so much in Germany that interventions and caring for nature are important to ensure the environment remains healthy and thriving. The fact that respondents demonstrated high emotional affinity with nature, but gave "little" back in return, emphasises that reconnection has to go beyond emotional restoration (Schuttler et al. 2018), positive experiences in nature (Hatfield & Rapson 1993; Chawla 1999, Dunn et al. 2006) and increased attention for nature (Coldwell & Evans 2017; Citton 2017).

To reconnect people in a healthy way with the material and experiential side of nature, strengthening the *cognitive dimension* of the human-nature relationship is most important. As many current studies show (Ardoin et al. 2020; Colding et al. 2020; Chaihanchai & Anantarchat 2022), environmental education and improving people's knowledge about local nature is essential, as it provides a cognitive framework and understanding that can guide and transform people's love for nature into responsible and informed actions. Better knowledge how to care for nature and how to use resources sustainably, would provide a more supportive framework, that would positively influence the other dimension such as the experiential and material connection but also the philosophical.

Given respondents belief that 'nature protection' means to leave nature alone, they felt it is not their responsibility to assist nature in increasing biodiversity or restoring ecosystems as nature was thought to "heal itself". As scholars (Raymond et al. 2013; Hedlund-de-Witt et al. 2014; Abson et al. 2017; Ives et al. 2018) have previously pointed out, worldview and belief systems are important in this context as they form the source of values that guide human behaviour. In fact, perceiving humans as harmful for nature feeds into the so called 'sacredness discourse' that fuels the environment/society disconnect as it portrays humans as an enemy of nature (Berry 2019). This dichotomous

conceptualisation of humans and nature is a barrier for ecological wellbeing (Plumwood 2001; Tam 2013, Schuttler et al. 2018; Barlow et al. 2019), as it prevents people from feeling responsible for the wellbeing of nature. The integration of more eco-centric values into environmental policies and nature-conservation is needed to drive environmental change (Taylor et. al 2020). The IPBES¹⁹ assessment report of 2022 (IPBES 2022) is a promising step that acknowledges the multiple values of nature and its benefits but needs to find more implementation in local nature management strategies.

Based on those arguments, I suggest that Ives et al.'s (2018) model should be reordered with most importance on strengthening the cognitive dimension, followed by promoting the idea of relational values and interconnectedness on a societal and political level (philosophical dimension). This would have greater impacts on environmental health than focussing on reconnecting individuals on an emotional level, as that often results in romanticised ideas about nature that lacks knowledge and action.

7.3.2 Changing the human-nature discourse and restoring local knowledge

To reverse the separation between society and nature, it is important to change the public discourse from humans as harmful entities into caretakers of the land. This could encourage people to feel more responsible for the wellbeing of local nature and motivate them to become more active in nature conservation. As Berkes stated (2004), “knowledge-believe-practise” patterns are important for bridging culture with nature and transferring local knowledge into collective knowledge that guides people’s actions. This, however, presupposes (1) a different perception of humans as an essential and integral part of nature as well as (2) existence of knowledge and awareness as how to care for the local environment. Reconnection measures should therefore strengthen local knowledge about nature (Cosquer et al. 2012, Soga & Gaston 2016), but also incorporate aspects of learning how to care for the local environment (Jax et al. 2018).

My findings show that the respondents from both case studies were interested and concerned about nature. Channelling people’s interest about nature, their willingness to spend time in it, and their emotional connection and concern into conservation actions, would be steps towards more sustainable development. However, this should not only rely on individuals’ motivations but should be managed and encouraged by local authorities

¹⁹ IPBES is an independent intergovernmental body comprising over 130 member Governments. Established by Governments in 2012, IPBES provides policymakers with objective scientific assessments about the state of knowledge regarding the planet’s biodiversity, ecosystems and the contributions they make to people, as well as options and actions to protect and sustainably use these vital natural assets.

and decision makers to demonstrate the importance of nature and nature conservation on a broader scale.

Despite the attachment and people's identification with typical German landscapes, (which confirms Gayton (1996) assumption about the importance of primal landscapes), people's nature connection was expressed less as an attachment or connection to specific places (Stedman 2003; Tonge et al. 2015), but more through social, psychological, historical and spiritual connections (Hidalgo & Hernandez 2001; Lewicka 2010; Knez 2012). One reason for this could be that people's overall mobility and where they live at any one time creates an overall detachment from places and meaningful involvement in them (Smith & Relph 1976; Kellert 2013). As the literature emphasises, the more people engage and know about a place, the stronger is their sense of belonging and ownership (Kernan 2010). This increases people's willingness to invest in conservation purposes and look after those places (Halpenny 2010; Ramkisson et al. 2012; Tonge et al. 2015; Wan 2021). Reconnecting people with nature in Germany should include approaches that encourage a meaningful engagement with places, such as local stewardship programs, but also encourage a better understanding of how nature has changed during the years with the help of history and stories (Aikau 2019).

Studies have shown that nature-based-citizen science is one successful approach that encourages people to learn more about their natural surroundings and it engages them in conservation projects (Lewandowski & Oberhauser 2017; Schuttler et al. 2018, Toomey et al. 2022). Nature-based citizen science, however, was not well known in both case studies locations and none of the respondents had participated in such projects. Better promotion and implementation need to come from both government and politicians to encourage more people to take part in these conservation projects. Such programs would help to target specific age groups such as children, young adults, or pensioners with different projects to make them most engaging and applicable. Nature-based citizen science could for example be part of a school project or be integrated into youth education programs. The use of apps could play a vital role as they are handy and user-friendly tools that can improve the user-experience (Santori et al. 2021), and make nature conservation more interactive and appealing.

To reconnect people with nature-conservation, environmental stewardship is another interesting approach that includes active restoration activities as well as the sustainable use and management of resources (Bennett et al. 2018). Many cities have started to implement civic ecology practises such as urban gardening, public participation in green

space restoration and development, and self-governed greening in the neighbourhood to reverse the negative cycle and encourage local stewardship and place bonding (Buijs et al. 2018; Mattijssen et al. 2018; Eland et al. 2019). The fact, however, that neither nature-based citizen science nor local stewardship was well known or popular among the participant groups in Germany demonstrates the need for better promotion and implementation of these practices, not only by conservation societies and individuals but also by government. In fact, people's lack of engaging in nature conservation projects indicates a broader structural and societal problem, addressed in the next section.

7.3.3 Integrating caring for nature into people's life

Findings showed that the main driver of human-nature alienation and separation was not necessarily the lack of nature in cities or an emotional disconnection, but changes occurring in lifestyle. This challenges the broad agreement within the literature that urbanisation and limited access to green space is one of the main drivers of disconnection (Cumming et al. 2014; Kondo et al. 2018; Reyes-Riveros 2021)

Urban gardening for example is a good practice that increases the space available for nature and reconnects people with the material side of nature (Cabral et al. 2017; Hoffmann 2018). This study, however, found that caring for a garden is a long-term project that most respondents cannot commit to in both the rural and urban area due to their fast-paced lifestyle. The growing popularity of gravel gardens and low maintenance (front) gardens illustrate this problem. Respondents' inability to care and look after nature was not only found to be a personal choice or individual disconnection, but also a societal and structural 'problem' that demands and creates a lifestyle that leaves limited time, opportunities, and resources for nature.

Currently, reconnecting people with nature and nature conservation is a function of an individual's motivation and interest. To compensate for the loss of nature in people's daily life, urban as well as rural residents try to reintegrate nature back into their life during their recreational time. Reconnecting with nature, however, should not be just a hobby that people choose to do in their spare time. Reconnecting people with nature in a meaningful way must include structural approaches and political support to make caring and looking after nature more relevant and applicable for people's everyday life. Nature should be an integral and essential part of people's life and reconnection measures require more structural changes that go beyond individual compensation strategies.

Having a greater focus on how to integrate caring for nature back into people's daily life is essential, requiring the support of politicians and decision makers. This would demonstrate the relevance of nature and nature conservation on a societal level, but also encourage individuals and companies to care more for local nature and nature conservation.

7.3.4 Moments of “awe” foster sustainability

This study found that only a small number of respondents experienced forms of transcendent-nature experiences, however they did indeed trigger a shift in their perception. Respondents described those experiences as becoming aware of one's own insignificance and remembering one's part in the world. Experiencing oneself in relation to nature, but also as part of the whole evoked shifts in perspective and was described as engendering oneness or as a meditative state of high alertness and universal love. According to the literature, these experiences classify as transcendent or spiritual experiences (Frederickson & Anderson 1999; Van den Berg & Ter Heijne 2005; Shaw & Francis 2008). As scholars point out, spiritual experiences can be highly influential in shaping deep values and beliefs (Ives et al. 2018), but are underestimated and under-researched as factors that can improve sustainability practice (Hitzhusen & Tucker 2013).

Previous research has emphasised the importance of being 'in awe' as a transcendent experience to achieve high levels of nature connection (Davis & Gatersleben 2013; Yang et al. 2018). According to the literature, being in awe shifts people's focus from their self-centred interests into a broader existential sense of being (Rudd, Vohs & Aaker et al. 2012), and encourages them to take the welfare of other people, the community and nature into consideration (Saroglou 2016; Cheung, Luke & Maio 2014). Such an interconnected perception and intrinsically guided motivation to help (Prade & Saroglou 2016) is regarded as essential to counteract the “ecological crisis” (Kellert 1997; Schultz 2002; Ulrich 2008; Anderson 2009; Tam 2014, Zylstra 2017).

Consistent with previous studies, the expansion of self into the natural world increases people's willingness to help and to care for nature (Roszak 1995; Cialdini et al. 1997; Schultz 2002; Mayer & Frantz 2004; Yang et al. 2018). In this project, respondents who had a transformative experience with nature also showed a higher engagement with nature and felt a new sense of responsibility to actively care for nature. The more people identified with nature and perceived themselves as part of it, the more they felt responsible for its wellbeing. In this study, transcendent experiences with nature do

initiate more meaningful engagement with the world and deepen people's nature connection and feeling of belonging, as scholars previously assumed (Silvia et al. 2015; Saarinen 2017; Pritchard et al. 2019).

According to Stern and Dietz (1994) motivations for nature-conservation among people with transformative nature-experiences are not only driven by egoistic or altruistic motivations to protect and conserve nature, but were also encouraged by biospheric value orientations, as they sought to care for nature and animals. The outlook people gain through transcendent nature-experiences functions as a source of strength and resilience to overcome the so called "attitude-behaviour gap" (Kollmuss & Agyeman 2002; Juvan & Dolnicar 2014) or "value-action gap" (Blake 1999; Flynn et al. 2010). In fact, as studies have shown before, biospheric value orientation encouraged people to support the environment despite personal discomfort or disadvantage (Thomson & Barton 1994).

The transcendent or spiritual nature connections are not only important for the wellbeing of individuals but also for ecological wellbeing, as they both positively affect people's commitment to care and look after nature. These findings, therefore, highlight the importance of being in "awe" with nature and confirm it to be a mechanism to foster sustainability and ecological behaviour. There is a need for more moments where people are in "awe" with nature and should be considered in regional planning and outdoors tourism. Hereby the key is to foster an understanding that the 'everyday' nature experienced in people's daily life entails the same value and needs the same care and protection than the overwhelming and breathtaking nature experienced in National Parks. This experience of being in awe with nature, however, can act as a starting point to evoke a deeper sense of appreciation and love for all different forms of nature that may be re-experienced and remembered by looking at a beautiful flower or butterfly.

7.4 Combining nature-based recreation and conservation

The next section demonstrates the implications of people's growing recreational demand in nature that the COVID-19 pandemic has reinforced. Due to the increased importance of nature for people's health and wellbeing, this section outlines ways to combine nature-based recreation with environmental protection and conservation in a better way.

7.4.1 COVID-19 and increased wellbeing reinforced the value of nature

In the literature there is a growing concern about people's limited contact and experience of nature especially in urban areas (Chawla 1999; Pyle 1993; Kellert 2012; Soga and Gaston 2016; Schuttler et al. 2018). This study, however, found that spending time in nature was very important to urban as well as rural respondents to balance their lifestyle, especially during stressful times such as the COVID-19 pandemic. As with previous studies, this study confirmed a strong link between nature connection, nature-contact, and individuals' wellbeing (Korpela & Hartig 1996; Mitchell and Popham 2007; Roe et al. 2013, Mitchell et al. 2015, Foley 2016). As other scholars (Howell et al. 2011; Coleman & Kearns 2015) have found, being in nature was a place where respondents said they could switch off, restore, and relax from their hectic lives. As physical and mental stress-symptoms often occurred after periods of absence of nature, a decrease in people's health and wellbeing become the largest motivation for change their priorities and reintegrate more contact with nature back into their life.

Facilitation of the healing effects of nature can be seen as an important step towards a closer and more mindful relationship with nature that has the potential to counteract the "extinction of experience" (Pyle 1993; Lacoeuilhe et al. 2017). Concerns about the continuously growing separation of man from nature is less likely, as most people experience mental as well as physical stress-symptoms when they disconnect from nature for long periods. The dystopia of ever-optimizing cyborgs (Shaw 2007) has its limitations, as people's emotional connection to nature was essential for their physical and psychological wellbeing. Findings from this study confirm and strengthen Kellert's and Wilson biophilia hypothesis (1995), which emphasises that strong interconnection between humans and nature is necessary to thrive and develop healthy people and ecosystems.

Confirming a study by Jackson et al (2019), one unexpected finding here was that the pandemic initiated a new popularity for nature and nature-based recreation, as more people experienced an increase in their health and wellbeing during the lockdown restrictions. In fact, findings from both case study areas in Germany demonstrated that stressful and uncontrollable circumstances, such as the COVID-19 pandemic, were a fertile ground for people to develop a new sense of nature-awareness that initiated a reconnection to local nature on a societal level. Consistent with a study in Oslo (Venter et al. 2021), the COVID-19 pandemic increased the use of urban green spaces and reinforced their value. Other studies (Soga et al. 2020) such as in Tokyo also confirmed that (urban)

nature gained an increased importance for public (mental) health and wellbeing during lockdowns. In alignment with those studies, this study found that people from urban as well as rural areas used nature as a form of self-therapy to deal with anxiety and negative moods, which demonstrably increased during the COVID-19 lockdown periods (DBD 2022). Contact with nature then decreased negative emotions (Bratman et al. 2015) and chronic stress (Korpela & Kinnunen 2010).

Greener cities are a goal that formulated in the new European Biodiversity Strategy for 2030 (European Commission 2021). The strategy recognises the “value of green urban space for our mental and physical wellbeing” (European Commission 2021 p.12), and aims to stop the loss of green urban ecosystems, and promote nature-based solutions into urban planning. Measures should include “biodiverse and accessible urban forests, parks and gardens, urban farms, green roofs and walls, tree-lined streets, urban meadows and hedges” (European Commission 2021 p.13.).

The renaturation of the Pader river, Paderlake, and the Paderparklands in Paderborn (refer Plate 7.1) for example, were extensive environmental projects designed to achieve such goals and improve biodiversity and the quality for local recreation areas in and around Paderborn.

Plate 7. 1: Renaturation results of the Paderparklands and the Paderlake.



Source: © Lina Loos

The implementation of ‘greener cities’ is nonetheless a rather slow and lengthy process that requires structural changes in urban planning and a continuous ‘green’ outlook, that depend on political aspirations and financial resources. Findings nonetheless emphasise that people’s growing awareness of nature to rebalance their lifestyle and improve their physical and mental wellbeing, is an influential step that pushes policy and decision makers toward programs for greener cities.

As the positive effects of mindfulness in nature are increasingly recognized (Lovell, Depledge & Maxwell 2018; Pritchard 2019; Martin et al. 2020), the growing interest in nature-based recreation and tourism can be seen as a step towards reconnecting people to their local environment. To prevent the destruction of pristine and sensitive ecosystems, decision makers and outdoor tour operations could responsibly develop and incorporate strategies to enable people to experience the healing effects of nature without harming it. This is discussed in the following section.

7.4.2 Nature-based recreation needs better implementation

This study highlighted that the increased demand for nature-based recreation and relaxation needs more attention and better implementation. Currently, protected areas are often overused to satisfy people's wish for relaxation and recreation, which became critical during COVID-19 lockdown. As people lacked awareness about how to behave respectfully and appropriately in nature-conservation areas, they harmed and disturbed nature primarily established to provide sanctuary for flora and fauna and to protect them.

People tended to disregard conservation standards when it interfered with their intent to use nature for recreation and relaxation purposes. This demonstrates on the one hand an action-value gap (Kollmuss & Agyeman 2002; Juvan & Dolnicar 2014), as well as the prevalence of an anthropocentric outlook and behaviour that constructs nature primarily as being for people's own use and benefit (Thomson & Barton 1994). The findings of this study demonstrate that not only green space and nature in cities is threatened by pollution and homogenisation (Dunn et al 2006; Celis-Diez et al. 2017), but surrounding nature-conservation areas may also be harmed by people's recreation needs.

In contrast to literature, that argues that the "extinction of experience" is the main problem within the human-nature relationship and the reason for environmental destruction, findings here showed that an overemphasis on nature-experiences and nature-based recreation is equally harmful for nature's wellbeing when people lack knowledge about the importance of nature conservation and its local relevance. This must start by introducing children to conservation areas and by making nature conservation a priority in the political agenda and people's everyday life.

The COVID-19 pandemic has further demonstrated that current management strategies are not sufficient to provide undisturbed nature-contact in ways that release stress and ability to connect with oneself and others, while upholding nature-conservation

standards. Although the COVID-19-pandemic was a unique situation, it is assumed that more social/health “crises” will occur in the future (Smith 2021), which means that more people will look to nature to recharge, restore and relax. This means that politicians and decision makers must start now and plan to implement a better and more successful combination of nature-based recreation with nature conservation and protection. This critical interface of nature-based recreation and nature-conservation does not only apply to Germany but to most developed countries with large populations and increasing urbanisation, as residents will continue to long for the experience of nature outside of cities. Currently, this clash between nature conservation and nature recreation causes conflicts and misunderstandings between practitioners on the one side, and recreational users on the other.

Further, with the growing interest in nature-based recreation for health and wellbeing, structural approaches and investments are needed to facilitate and enable a better recreational experience as well as better nature protection. This will require more resources, such as an increased number of rangers and local guides, as well as financial investments to ensure that conservation standards can be upheld, by installing better routes, more facilities and signs, to reduce the impact of tourism on ecosystems. Moreover, there is a need for better environmental awareness and education about local nature sports and nature-conservation usage, as people are often unaware of their ecological footprint and the importance of certain endangered species.

7.4.3 Gender-differentiated programs are beneficial for nature connections

Findings showed that gender specific preferences and characteristics enhance close nature connections, extending previous studies that investigated the influence of personality on people’s nature connection (Davis & Gatersleben 2013). Previous research has already identified that “sensation seekers” were predominantly male, who responded positively to threatening or wild environments (Zuckermann 1994; Herzog & Rector 2009). However, as other scholars (Perez-Ramirez et al. 2021) argue, females are more likely to express their nature connection in a broader philosophical sense than males. This aligns with findings from this study as females described more harmonious and peaceful moments in nature such that they felt immersed in nature and connected with themselves. Studies affirm a close link between self-awareness, reflexivity and nature connection for both males and females (Frantz et al. 2005), which scholars have explored through contemplating nature-based activities such as beach running (Game & Metcalfe

2011), surfing (Anderson 2012), open water swimming (Foley 2015) or scuba diving (Straughan 2010).

The implication of gender sensitivity regarding nature connection is that reconnecting activities in nature would benefit from different approaches for males and females. Based on the findings from this research, women may prefer more sensual stimulations and mediative states of peacefulness in nature, while men may be stimulated by more 'dangerous' activities that trigger an adrenalin rush to experience a deeper sense of nature connection. Previous studies already promote the positive effects of wilderness camps (Vroegop 2015), or yoga and mindfulness retreats immersed in nature (Lea 2008). In fact, outdoor tourism is an important way to enable close and meaningful contact with nature to transform people's nature connection. As ecofeminism often includes references of water and swimming (Gaard 2001; Shaw & Francis 2008), (meditative) water activities may be beneficial and appealing for women to experience a deeper sense of nature connection.

Even though more women are taking part in adventure/outdoor tourism than ever before, research (Blaine & Akhurst 2021; Clarke et al. 2021) shows it is still traditionally designed and advertised as a masculine domain. Based on the gender sensitivity regarding nature connection in this study, it can be argued that current outdoor programs do not necessarily support and strengthen women's ability to perceive the same deep and meaningful nature-contact as men may experience. Outdoor tourism has only recently started to pick up the growing demand for activities, specifically designed and targeted for women. The focus of these groups is on connection and shared experiences in nature, rather than on competition and adrenalin (Aman 2019). In my opinion, women-only join surf camps, female hiking groups, and other outdoor activities designed to empower and support women to experience nature connection in a deeper way. I think this is an important step towards redefining the masculine framework of outdoor tourism and nature-adventure, as it provides space for women to experience and connect with nature and other women in their own way. The success of these activities demonstrates that there is a growing demand for gender differentiated outdoor activities that should attract higher levels of investment. The provision of experiences in nature that suit and support women to connect and experience a more intimate and spiritual form of nature connection, would increase their capacity for meaningful and transformative experiences in nature and foster ecological behaviour. Given that women have been found to demonstrate a significantly higher level of pro-environmental behaviour than men (Anderson &

Kretenauer 2021), any improvement in women's nature-experiences would be highly beneficial and support pro-environmental behavioural change.

7.5 Summary

This chapter has discussed the nature connections and disconnections in the human-nature relationship in rural and urban areas in Germany. Findings show that cities are not places in which the human-nature relationship atrophies, and reconnection approaches should focus on providing positive childhood experiences in nature, enable mindful nature experiences in wild landscapes and reconnect people with the material side of nature. The second part discussed the implications of nature connection and disconnection for pro-environmental behaviour and ecological wellbeing. People's lack of knowledge and awareness, rooted in an alienated and separated lifestyle from nature, was the main reason for anti-environmental behaviour and not emotions or the so-called ecological crisis. Therefore, reconnecting people with nature must go beyond emotional restoration and positive experiences in nature, as it needs structural/societal changes to reverse the societal disconnection that reproduces further disconnection. The third section demonstrated the implications of people's growing recreational demand for nature that the COVID-19 pandemic has reinforced. Due to the increased importance of nature for people's health and wellbeing, nature-based recreation needs more attention and better implementation, especially in rural areas and nature conservation areas.

8 CONCLUSION

8.1 Introduction

This study investigated modes of nature connection and disconnection through a comparative case study approach to compare urban and rural areas in Germany. In total 24 qualitative interviews with selected residents were conducted as well as 10 interviews with practitioners from both case study locations. This study set out to answer the following research questions (i) what are and how do the modes of human-nature connection manifest in rural and urban areas in Germany? (ii) What are and how do the modes of human-nature disconnection manifest in rural and urban areas in Germany? (iii) Does nature connection and disconnection affect pro-environmental behaviour and ecological wellbeing? (iii) What are the implications of the findings for policy and planning?

This last chapter summarizes the key findings as posed by the research questions and discusses their implications for policy and planning. It concludes with suggestions for future research that will contribute towards reconciling the human-nature relationship and improving sustainable development.

8.2 Summary of key findings

The following section answers the research questions and discusses the implications for policy and management.

8.2.1 What are and how do the modes of human-nature connection manifest in rural and urban areas in Germany?

There was little difference found between urban and rural respondents' relationship with nature. Findings demonstrate that respondents from both case study areas were emotionally connected with nature, with similar themes in their description and experience of nature connection. Analysis shows that respondents from both areas are mindful and attentive of nature and feel emotionally connected with nature. Mindfulness and attention are influential factors that shape and increase urban as well as rural respondents' perception of nature connection. Familiarity and knowledge about nature, as well as place attachment, also increases people's perception of nature connection, found

more dominant and relevant for rural respondents, particularly those who worked with nature. Different types and forms of nature, such as Conservation Areas or National Parks in contrast to city parks, seem to fulfil different functions and either remind people of their nature connection or build and develop this relationship further through engagement and interaction. This study demonstrated that people's relationship with nature is a dynamic and evolving process that transforms and changes throughout their life. Age and maturity appeared to positively influence nature connection as well as positive childhood experiences in nature.

Findings demonstrated that the increase in people's health and wellbeing intensified people's appreciation and strengthened their bond with nature, which became even more relevant during the COVID-19 pandemic. The positive effects on respondents' health and wellbeing were the biggest motivation for people to reconnect with nature in the urban and rural case study locations. The COVID-19 pandemic created unique circumstances for people to slow down and take more time to appreciate nature and explore their local area, and maintain their wellbeing. Findings demonstrate that nature is an important source for people to relax, recharge and cope with anxiety and isolation, particularly during the COVID-19 pandemic. They highlight the fact that feeling emotionally connected with nature is also fundamental for people's emotional and physical wellbeing.

Considering the fact that respondents perceived themselves as connected and mentioned the importance of nature for their lives raises the question of how and why we are living a life in which nature plays such a marginal role. The importance of nature, particularly for people's physical and psychological wellbeing, demonstrates the relevance of Kellert and Wilson's (1995) biophilia hypothesis, suggesting people's innate tendency to seek connections with nature and other forms of life. Although their hypothesis belongs to the last century, its message has not lost its relevance. In fact, drawing on their findings emphasises that the close connection of people with nature may be more important than ever, as people long, physically and psychologically, for the natural world. Therefore, it is time that those assumptions and hypothesis no longer remain academic theory, but are taken seriously in policies and societal structures to enhance sustainable development and reconcile the human-nature relationship.

8.2.2 What are and how do the modes of human-nature disconnection manifest in rural and urban areas in Germany?

Findings showed little difference between urban and rural respondents' perceptions of nature disconnection, but differences existed in their understanding of nature disconnection, particularly those who professionally worked with nature. Respondents from both case study locations perceived nature disconnection as being a missing emotional bond with nature, as well as lacking attention and appreciation for nature. This was a common reason for disrespecting and ultimately destroying nature. The current ways nature is used were construed as being harmful and disrespectful to nature.

For practitioners, the definitions of disconnection were based on how people behaved in nature and whether they exhibited any stewardship or commitment to care for it. Nature disconnection, for example, was a one-sided consumption of the beauty of nature without correlative caring for its wellbeing. Practitioners also perceived disconnection as exhibited by a detachment from the material side of nature and a lack of involvement in caring and harvesting from nature. Most practitioners assumed that a lack of knowledge, and awareness about nature and conservation, was the main reason for environmental harm – albeit unintentional – not residents emotional disconnection from nature. Disconnection was also constructed by practitioners to result from commonly held misconceptions and misjudgements by residents of what is beneficial for nature, and the belief that nature conservation should not be driven by emotionally charged feelings about nature, that become divorced from interconnections within the ecosystem. The ways in which residents idealised and romanticised nature were a disguised form of disconnection, one that *appears* as a love and appreciation for nature, but is in fact manifest as an unrealistic and alienated understanding and perception of nature. The perception that residents are unable to care and look after nature was not constructed just by personal choice but by societal/structural issues changing lifestyles in which caring for nature is no longer a necessity.

The different modes of nature disconnection that emerged from this study show that most forms of disconnection are preventable as they are rooted in an (imposed) lifestyle that drives alienation and separation, but and are not caused by people's intentions. A deterioration in environmental health makes it easy to believe that people do not care and emotionally disconnected from nature, which most of the literature around nature disconnection suggests (Turner et al. 2004; Pett et al. 2016; Soga & Gaston 2016; Schuttler's 2018). Urbanisation and urban lifestyles, however, do not decrease emotional

affiliation and commitment to protect nature. People are aware that CO2 emissions, for example, have to reduce to stop environmental destruction, but they often find themselves in a system with limited options for a behavioural change.

Focussing on cities and urbanisation as the main obstacle for environmental health is not extensive enough, as it does not address the main problem. Reducing a lack of (engagement in) nature conservation by promoting nature-based citizen science or improving individuals' nature connection, is not enough, as it requires a political change to reverse the societal disconnection that reproduces and reinforces disconnection.

8.2.3 Does nature connection and disconnection affect pro-environmental behaviour and ecological wellbeing?

Overall, nature connection increased environmental awareness and concern, but not the commitment for environmental actions that go beyond recycling or reducing plastic. Results however, showed the significance of transformative experiences with nature as they enhanced the commitment of respondents who then wished to become actively involved in the promotion of ecological wellbeing. Findings also highlight that transformative nature-experiences are not dependent on the characteristic of being an urban or rural resident but rather shaped by gender and the remoteness/diversity of the landscape.

8.2.3.1 Can a better understanding of human-nature relationship combat environmental issues?

Understanding the human-nature relationship is nonetheless important to combat environmental issues. Not because nature connection is the solution that solves the environmental crisis, but it provides a better understanding of aspects and forms of nature disconnection that exist, and how to prevent, mitigate and improve them. In fact, a better understanding of the human-nature relationship clarifies whether we only need to rebuild our relationship with nature on an individual level, or whether there is a need for change to more structural and political issues to improve ecological wellbeing. This way more reconnection approaches can be improved and targeted to not only benefit people's wellbeing but also include nature's, which underpins sustainable development.

In contrast to the widely held assumption that reconnecting people with nature is the solution for the environmental crisis, this study highlights that individuals' reconnection is not enough as this was mainly found to increase environmental awareness and concern, as well as small environmental actions such as recycling and reducing plastic. Individual's

nature connection did not have the scope to increase pro-environmental behaviour that required more commitment.

This study demonstrated that people's involvement in nature conservation requires motivation and commitment from them to become active and increase ecological wellbeing. Rebuilding people's relationship with nature and increasing people's involvement in nature conservation, however, should not be limited to privileged and/or motivated people, who have enough time and financial resources to do so. In order to improve ecological wellbeing, we cannot only rely on individuals' nature connection, but must also incorporate more structural changes that prioritise nature and nature conservation on a political level and in people's everyday life. People's emotional bond, their willingness to spend time in nature, and growing environmental awareness and concern should be channelled by a higher authority into more sustainable reconnection approaches that benefit both humans as well as nature.

8.2.3.2 Does individuals' disconnection exacerbate the effects of environmental change?

Disconnection from nature is one reason for environmental destruction. This research, however, demonstrated that there is a misconception of what disconnection from nature means. In this study, respondents, regardless of where they lived, felt emotionally connected with nature and had meaningful contact and even transformative experiences in nature. Urban nature does not provide the same nature experience as wild and untouched nature, but due to residents' mobility and growing interest in nature-based recreation to increase their health and wellbeing, the prevailing concern of the extinction of experience (Pyle 1993) seems to be outdated.

This study showed that disconnection manifests as lacking knowledge and awareness particularly about local nature and nature conservation, as well as an alienation from the material side of nature, which drives unsustainable consumption. People in urban as well as rural areas have a misconception about how things are produced, which makes it difficult to evaluate how a sustainable consumption of natural resources should look. As the study showed, people do not harm the environment intentionally but are often unaware of their ecological footprint due to an alienated and separated lifestyle. I therefore argue that disconnection from nature should be re-defined; not as an emotional separation and extinction of experience, but as an (imposed) lifestyle that leaves limited opportunities for people, to learn about, engage, and care for nature. This, however,

cannot be reconciled by the efforts of individuals alone, but demands changes on a structural/societal and political level to counteract this human-nature separation.

8.2.4 What are the implications of findings for policy and planning?

This study illustrated that in order to achieve better conservation practises and biodiversity, we cannot only rely on individuals' nature connection but must also incorporate more structural changes that prioritise nature and nature conservation in politics and people's everyday life.

As nature connection as an intrinsic motivation on its own was not found to increase pro-environmental behaviour that required more commitment than recycling or reducing plastic, external motivations, and better opportunities for residents to engage in nature conservation. Politicians and decision makers should take more responsibility to create opportunities for people to engage in nature conservation, which would counteract the declining knowledge and misconceptions about nature and nature conservation.

As findings highlight, it would be most beneficial if these projects are integrated into kindergartens, schools, universities, and people's work environments to make caring for nature a meaningful and integral part of people's everyday life. Most of nature-based kindergartens and primary schools in Germany are privately funded and have long waiting lists. To ensure that more children establish an emotional bond and connection with nature regardless of their socioeconomic/cultural background, governmental kindergartens and schools should also incorporate more nature-based activities and include caring for nature in their curriculum, such as looking after a school garden or caring for animals. This would ensure that not only privileged children can establish this bond with nature but also children from disadvantaged backgrounds. More focus and investment on reconnecting children with nature in government funded schools and kindergartens is needed, particularly for children from lower socioeconomic backgrounds.

There is also a need for new initiatives such as positive incentives such as tax reductions to make nature-conservation more appealing. In addition, environmental volunteers could be acknowledged and given incentives such as free access to public facilities such as pools or zoos to make caring for local nature more attractive and relevant for residents. Companies and institutes could receive tax benefits or other rewards when they include nature into people's workplace or establish a garden with fruit trees or plant wildflowers for insects. Those measures would demonstrate the relevance of nature and nature

conservation at a societal level but would also encourage individuals and companies to care more for local nature and nature conservation.

To reconcile people's material disconnection from nature, strengthening local production, such as farmers market and supporting small-scale farming, would be beneficial to reconnect residents with (sustainable) food production. Further, a more positive discourse about people's dependence on natural resources is needed for people to (a) re-identify with the material side of their relationship with nature, to (b) feel more responsible for the (un)sustainable use of these resources. Campaigns are necessary in both rural and urban areas to explain where products come from, and who produces those goods, as well as promoting stricter rules regarding product labelling and marketing.

Initiatives such as National Park Cities and/ Wild Cities are promising approaches to reconnect urban residents with more diverse and wilder nature. Those approaches, however, have just started and do not incorporate smaller cities or rural areas in their models yet, but such areas would equally benefit from wilder and more diverse nature. New initiatives have great potential so long as they do not become meaningless labels but change the way cities integrate diverse nature and combine them with urban living. To improve ecological wellbeing, however, it requires more than only greening' cities and increasing people's incidental contact with nature in urban areas. Therefore, it is recommended that these projects should not only physically reconnect people with wilder and more diverse environments, but should also be designed to strengthen people's cognitive nature connection, so residents also learn how to care for and live within biodiverse landscapes.

Local guides, workshops and education programs that convey local knowledge are needed to ensure greater success of projects and initiatives. This should also include approaches to encourage a more meaningful engagement with places to foster local stewardship. This could be done by providing nature tours, as well as information signs to strengthen these connections and embed places into a larger context. A better understanding of how nature has changed over the years with the help of history and stories, would emphasise why nature conservation is important. For example, specific age and interest groups could be targeted for citizen science with the help of apps to make nature conservation more appealing. All these measures, however, should not only be targeted at urban areas. More local nature conservation initiatives and projects should be established and offered in rural and suburban areas, as they receive less attention and need more support to foster sustainable development, particularly for people from lower socioeconomic backgrounds.

8.2.4.1 Combining nature-based recreation and nature conservation

The growing demand for nature-based recreation requires more financial as well as personnel resources to reconnect with nature in a sustainable and beneficial way. More rangers, local guides, as well as better route concepts in Nature Conservation areas and National Parks, would be helpful to ensure that nature-conservation regulations are followed. Moreover, ecocentric values should be integrated into environmental policies and management strategies to overcome the anthropocentric usage of nature. The IPBES 2022 report (IPBES 2022) can hereby act as a guideline to acknowledge the multiple values of nature, biodiversity and ecosystem services, for providing policy-relevant knowledge to all levels in government, the private sector and civil society. It can also act as a guide for local governments to protect nature and biodiversity beyond anthropocentric interests.

More community engagement is needed as well as better communication and exchange with recreational groups, sport clubs, and residents to strengthen the engagement of people for environmental protection and prevent harmful behaviour in Nature Conservation Areas. This must also start by introducing children to conservation areas and by making nature conservation a priority in the political agenda and people's everyday life.

Transformative nature experiences should be pursued by outdoor tourism as it can motivate and encourage people to actively care for nature, which is important for improving ecological wellbeing. This means that more moments where people are in "awe" of nature are needed and should be facilitated in a sustainable way. On the one hand, better access to local recreational areas and national parks and/or conservation areas is essential for urban as well as rural residents and needs more attention in regional planning and decision making. On the other hand, gendered outdoor recreation activities may be supportive in enabling men and women to enjoy transformative experiences in nature. Findings indicate that woman may prefer more sensual stimulations and mediative states of peacefulness in nature, while men may be stimulated by more 'dangerous' activities that trigger an adrenalin rush to experience a deeper sense of nature connection. I recommend that by investing more in the growing demand of female-only outdoor tourism would be beneficial to strengthen women's nature connection and support a pro-environmental behavioural change.

8.3 Limitations and further research

Due to time constraints and the global pandemic, data collection had to be conducted from abroad and only focused on two case study locations in North Rhine-Westphalia. Despite the difficulties of doing research during a global pandemic, the successful data collection and analysis from abroad has demonstrated that qualitative research is possible via online technologies. This is an important finding and relevant for future research designs, as this considerably reduces fieldwork costs and avoids unnecessary CO₂ emissions, that may arise from flying/travelling to foreign places.

The main limitation of this research project is that findings cannot be generalised, as such small case studies only provide some insights that can be considered in a broader sense. It is important to note that findings about modes of nature connection and disconnection in Paderborn do not lead to any conclusions about how modes of nature connection and disconnection look like in other bigger cities such as Duesseldorf or Berlin, since the urban case study had considerably less inhabitants. Neither can Nottuln act as a representative example to depict and characterise the human-nature relationship in all rural environments and other parts of Germany.

The fact that there was little difference found between the urban and rural case study could be based on the fact that Paderborn and Nottuln displayed more similarities than expected. Paderborn does not have a big urban centre and is surrounded by farmland and countryside. Nottuln on the other hand is not an isolated village but is surrounded by bigger cities such as Muenster or Essen. Respondents from the 'rural' area were hence in proximity to bigger cities where they went for work and leisure, and respondents from the 'urban' area had good access to the natural areas in and around Paderborn. Findings from this study are nonetheless valuable and relevant to portray modes of nature connection and disconnection in 'common' rural and urban areas in North Rhine-Westphalia. Since current research has detected that more people are moving back to suburban and rural environments, findings from this study are thus helpful to gain insights about the human-nature relationship in typical living environments in North Rhine-Westphalia, as most people are living in small-sized cities and bigger villages.

Findings from case studies are also helpful as they can act as a starting point for future research. This study was conducted with an understanding that where people live affects and shapes people's relationship with nature more profoundly as cities are thought to alienate and separate people from nature. It is recommended that future studies replicate

the research approach and methods applied in this project in other more contrasting areas of Germany to verify, expand and compare the perspectives of nature connection and disconnection in urban and rural areas. Hereby, it would be also interesting to compare the human-nature relationship among different countries with contrasting features such a Western country compared to a developing country to see how and why nature connections and disconnections manifest and how they shape people's environmental behaviour.

Findings from this study also indicated that factors such as mindfulness, maturity, as well as childhood experience, are important for establishing an emotional bond and perception of nature connection. In fact, an interesting insight that emerged from this study is the indication of gender sensitivity regarding nature connections. Due to the small sample of male and female participants, an extensive study of gender difference could not be made. Further studies that investigate the human-nature relationship need to focus more specifically on investigating men and women's relationship with nature. This could help understand how and why females show a higher rate of pro-environmental behaviour (Anderson & Kretenauer 2021), and in what way they differ to men. Findings could be used to foster transformative nature connections among men and women and could encourage more ecological behaviour.

8.4 Conclusion

Climate change and environmental destruction is the challenge of the 21st century that needs to be addressed as a main priority on an individual as well as a global level. Although climate change was not the main focus of this research, scholars have stated, that nature connection is the foundation from where environmental change can emerge and develop (Kollmuss & Agyeman 2002; Schultz 2002; Mayer & Frantz 2004; Schuttler et al. 2018), which would also help to mitigate global warming.

This research project has generated encouraging results. They indicate that a first step and precondition for sustainable development has been made. Respondents showed a (high) level of nature connection, environmental concern, and awareness. Growing grass-root movements and environmental activism that emerge with the help of social media around the globe, also demonstrate that people are ready for a political change and demand an institutional and societal framework that allows, supports, and encourages individuals to live up to their values. Ultimately, this research project highlights that practitioners as well as residents share the same core intention and goal to protect nature

and to stop environmental destruction, which suggests that both sides acknowledge nature and nature conservation as a priority to achieve more sustainable development. What it now needs is a political framework that makes this goal become reality.

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Appendices

Appendix A:

Project Ethics Approval Letter.

Our reference 33963

31 March 2020

Associate Professor Melissa Jane Nursey-Bray
School of Social Sciences

Dear Associate Professor Nursey-Bray

ETHICS APPROVAL No: H-2019-224
PROJECT TITLE: The human-nature relationship: Exploring the (re/dis)connection to nature in rural and urban areas in Germany

Thank you for the amended ethics application provided by Vera Theresa Storp on the 30th of March 2020 requesting an amendment to the research location, research methodology, participation groups, size, and number, recording and feedback. The amendment has been approved.

The ethics amendment for the above project has been reviewed by the Low Risk Human Research Ethics Review Group (Faculty of Arts and Faculty of the Professions) and is deemed to meet the requirements of the *National Statement on Ethical Conduct in Human Research 2007 (Updated 2018)* involving no more than low risk for research participants.

You are authorised to commence your research on: 15/11/2019
The ethics expiry date for this project is: 30/11/2022


NAMED INVESTIGATORS:

Chief Investigator:	Associate Professor Melissa Jane Nursey-Bray
Student - Postgraduate Doctorate by Research (PhD):	Ms Vera Theresa Storp
Associate Investigator:	Dr Dianne Rudd

CONDITIONS OF APPROVAL: Thankyou for addressing the feedback. The revised ethics application provided on the 14th of November 2019 has been approved.

Ethics approval is granted for three years and is subject to satisfactory annual reporting. The form titled Annual Report on Project Status is to be used when reporting annual progress and project completion and can be downloaded at <http://www.adelaide.edu.au/research-services/oreci/human/reporting/>. Prior to expiry, ethics approval may be extended for a further period.

Participants in the study are to be given a copy of the information sheet and the signed consent form to retain. It is also a condition of approval that you immediately report anything which might warrant review of ethical approval including:



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- serious or unexpected adverse effects on participants,
- previously unforeseen events which might affect continued ethical acceptability of the project,
- proposed changes to the protocol or project investigators; and
- the project is discontinued before the expected date of completion.

Yours sincerely,

Dr Anna Olijnyk
Convenor

Dr Jungho Suh
Convenor

The University of Adelaide

Appendix B:

Interview guide for the semi-structured interviews.

Interview Guide

I) Individual background + Introduction

Name:

Age:

Gender:

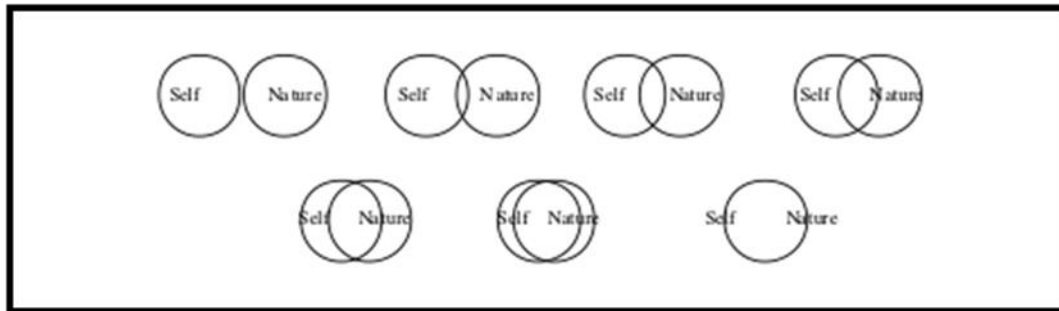
Occupation:

Educational background:

Where did you grow up: in a rural area in an urban area

1. *How long have you been living/working here in _____ (case study location)?*
2. *What are the reasons why you have moved here?*
3. *What does the term “nature” mean to you? How do you define nature?*
4. *What does it mean to you “to have a relationship with nature” and to be connected with nature?*
5. *Do you have a relationship with nature? Are you connected to nature? How does it look like?*
6. *Do you have a significant historical memory with nature you want to share?*
7. *How much time do you spend outside in nature per week?*
8. *What do you do there?*
9. *When you are outside in _____ (case study location), where do you go in nature? (map)?*
10. *Why do you go there?*
11. *Are you on your own or with other people (or dog) when you are in nature?*
12. *What does that depend on, how do you prefer it? And why?*
13. *What do you like most about nature here in _____?*
14. *What do you dislike about nature here in _____?*
15. *Do you feel close to nature here in _____ (case study location)? If so why, or why not?*
16. *What does disconnection from nature mean to you? How would you define that?*
17. *Are there moments where you feel separated or disconnected from nature? If so, how would you describe those moments, how does it look like for you?*
18. *What do you think are reasons and factors that influence how connected or disconnected you feel with nature?*
19. *What would you change here in _____ so people would feel closer and more connected with nature?*

20. From 1 to 7, which number would you pick that best reflect your knowledge about nature? 1 is very poor and 7 very good.
21. What is "knowledge about nature" for you? How do you define knowledge?
22. Please explain your choice and why you have picked this number.
23. Do you consider yourself a part of nature or not?
24. Please chose one image that best describes how integrated you feel with nature and why.



Source: Schultz (2002)

25. Do you think nature is important? In what ways?
26. What do you value most about nature?
27. How emotionally connected do you feel with nature? Please pick again a number from 1 to 7. 1 is distanced and 7 very close with nature.
28. Please describe the reasons why you have chosen this number for you.
29. Are there things that scare you regarding nature? If so, which ones and why?
30. What do you think: How, in your opinion, should people behave towards nature?
How do you define an ethical relationship towards the environment?
31. In your opinion, is there something like a spiritual connection to nature?
32. How would you define that?
33. Do you feel you have such a spiritually connection to nature?
34. Do you think having roots in a particular geographical location has a significant impact on your relationship with nature? If so, in what ways?
35. Do you think is matters for people's relationship with nature whether they live in rural or urban area? If so why, or why not?
36. In your opinion, are there factors in urban living environments that may impact the human-nature relationship negatively? If so, which one?
37. In your opinion, are there factors in rural living environments that may impact the human-nature relationship negatively? If so, which one?
38. Are there possibilities to assist you to get in touch with nature?
39. In your opinion, what role does technology, media and modern life style play regarding your relationship with relationship?
40. Can you think of potential risks or benefits?
41. What does nature-conservation mean to you?
If considered important, why do you think nature conservation is important?
42. What do you think is the responsibility of urban/rural planning for nature conservation?
43. How would you define pro-environmental behaviour?
44. Would you say you behave pro environmentally? If so, in what ways?
45. Are there barriers for you to achieve pro environmental behaviour?

46. *Have you engaged in conservation projects?*
 - a. *Please describe them.*
 - b. *Over what time frame were you actively involved?*
 - c. *Why did you choose this form?*
47. *In your opinion, is there a relationship between nature connection and pro-environmental behaviour? If so, in what ways does that apply to you?*
48. *In your opinion, is there a relationship between a close connection to nature and wellbeing? If so, in what way does that apply to you?*
49. *What, in your opinion, is wellbeing?*
50. *Has your relationship with nature changed after/during the COVID-19 lockdown period?*
51. *If so, please describe in what ways and why?*
52. *Is there anything you would like to add?*

Appendix C:

Aide memoire for the unstructured interviews.

Aide Memoire

- (a) questions about respondent's job position and in what broader sense that relates to nature.
- (b) Questions about the human-nature relationship in
The rural and urban area and what the practitioner
has experienced within their field of profession/expertise.
- (c) Their reflections on modes of nature connection and disconnection in the
urban and rural area based on their expertise.
- (d) The topic of COVID-19 and how that impacted their work/the
human-nature relationship in the case study location.
- (e) Information on environmental protection, management and
sustainability, which also included rules and regulations in place,
such as the EU Biodiversity Convention 2030 or the Paris Agreement.