Exploring youth’s nature values and desirable future visions of the Royal National City Park in Stockholm

Hannah Thiel – 19980528-8207
Abstract

As human activity continues to cause significant global issues, such as the decline of biodiversity, there is an increasing demand to engage with desirable visions of the future. Sustainability research emphasizes the significance of participatory approaches prioritizing nature and incorporating diverse human-nature relationships to promote more inclusive and sustainable paths to a positive future. However, the involvement of youth in current future studies is limited. Urban national parks provide valuable opportunities to investigate people-nature relations and their future. This study conducted a participatory futures workshop that combined the Natures Futures Framework and the Three Horizons Framework with fifteen young individuals living in Stockholm to capture their diverse nature relationships and positive future visions of the Royal National City Park in Stockholm. The workshop identified several aspects of nature in the park appreciated by the group, such as biodiversity, calmness, and the opportunity for recreation and connection to nature. If those values are projected onto a desirable future, this group of youth envisions the park to include reduced pollution, increased biodiversity, stronger protection and regulation, and prioritization of nature, with societal involvement and better accessibility. To support value-inclusive decision-making for the sustainable future of the Royal National City Park, collected values and visions were shared with park stakeholders. By collecting diverse nature value perspectives on a local scale using the Nature Futures Framework, this work contributes to the generation of a global perspective of desirable nature futures. While the Natures Futures Framework proved effective in generating rich value perspectives, a reflection survey revealed that not all participants found the framework easy to understand, particularly the difference between the different value perspectives presented in the framework. In conclusion, this study provides insights into possible futures and inspires actions toward a sustainable future where humans and nature coexist in harmony.

Keywords: Desirable future visions · Natures Futures Framework · Royal National City Park Stockholm · Three Horizons Framework · Transformation · Youth
Popular summary

As the world faces increasing environmental challenges, there is a growing need to imagine a better future that consists of sustainable ways of living and interacting with nature. The voices of youth are often overlooked in these conversations. To address this gap, a group of 15 young people from Stockholm participated in a workshop to envision the future of the Royal National City Park. The workshop used a combination of frameworks to capture diverse nature relationships and positive future visions of the park. The group of youths identified several aspects of nature in the park that they appreciate, such as biodiversity, calmness, and fun activities. They envisioned a future of the park that would prioritize nature, reduce pollution, increase biodiversity, and be more accessible to the whole society. These values and visions were shared with park stakeholders to inform decision-making for the park’s sustainable future. As a local case, this study contributes to generating a global perspective of desirable futures focusing on humans and nature and highlights the importance of including youth in these conversations. By amplifying their voices and harnessing their perspectives, we can inspire actions toward a more harmonious future where humans and nature coexist in balance. While there were some challenges in understanding one of the frameworks used in the workshop, the study demonstrates the potential for participatory approaches to inform policy and planning for a sustainable future. Overall, this study offers insights into possible futures and encourages us to imagine a better world where we prioritize the health and well-being of both people and the planet.
Ethical and social aspects

The majority of data was generated through a participatory workshop with youth between the age of 22 and 26 years. Youth participating in this workshop were accordingly the research subjects. Participants gave informed consent to participation and data processing to ensure respect for their rights to self-determination. Every participant received a plain language statement with information about the study and the processing of their input before consent was documented by signing the form to participate (appendix F). Each participant has had the opportunity to ask questions and it was emphasized to create a safe environment in which participants can equally share their opinions. Copies of signed consent forms, as well as generated data, were kept password protected. It was guaranteed that no sensitive personal material of individuals was published. Furthermore, the collected data from the workshop was generated as group output to ensure that the results are not traceable back to one individual to avoid the generation of sensitive data. Participation in this research was voluntary and participants were allowed to leave the workshop whenever they wanted without justifying. The same applied to stakeholders who were interviewed before and after the workshop. Interviewees received a plain language statement with detailed information about the study and their consent. Before the interviews, stakeholders were again informed that they have the right to leave the interview without justification. Interviews were recorded after asking for consent and the recordings were deleted as soon as the answers were transcribed into written form. This thesis will contribute to the development of the Nature Futures Framework, and the results will be openly available for that purpose.
Youths' values of the RNCP’s nature.................................................................22
Youths' diverse desirable future visions of the RNCP ......................................23
H3 – Desirable future..........................................................................................24
H3 - What needs to grow.....................................................................................26
H1 - What needs to go .......................................................................................27
The NFF as a workshop tool .............................................................................27

Discussion ........................................................................................................29
Diverse value perspectives ....................................................................................29
Development of visions ......................................................................................31
The NFF as a workshop tool .............................................................................34
Directions for future research ..........................................................................35
My interdisciplinary journey .............................................................................36
Conclusion ..........................................................................................................36

Acknowledgments .........................................................................................38

Literature cited..................................................................................................39

Appendices .......................................................................................................47

Appendix A: Semi-structured scoping interviews .............................................47
Appendix B: Workshop output and coding .........................................................49
Appendix C: Participant demographics and reflection .......................................1
Appendix D: Glossary of terms .........................................................................0
Appendix E: Preparing information participants received before workshop .......1
Appendix F: Consent form ..................................................................................4
Appendix G: Impressions from the workshop ..................................................5
Introduction

The survival and well-being of humans heavily depend on high levels of biodiversity, healthy ecosystems, and the services they provide. The current epoch we are living in, the Anthropocene, is defined by rapidly increasing human-caused impacts on our environment (Bennett et al., 2016; Crutzen, 2016; Riggio et al., 2020; Ruddiman, 2013). Anthropogenic climate change is one of the biggest threats our population is facing today and affects every ecosystem on our planet (IPCC, 2014; Rockström et al., 2009). Humans have caused dramatic changes in the relative abundance of many species and the rate of present biodiversity loss is worldwide at an alarming level, which not only negatively impacts the earth’s capability to adapt to new conditions, but also affects our well-being (Carpenter et al., 2006; Heywood, 2019; Perrings, 2014). Approximately a quarter of all species are at the risk of extinction, and ecological biomes have decreased by an average of about 50% (IPBES, 2019). The Parties to the Convention on Biological Diversity (CBD) warn that the planet’s ecosystems could reach a point of no return and suffer drastic and irreversible alterations if immediate action is not taken (Secretariat of the Convention on Biological Diversity, 2020). Although we have gained more knowledge about the negative impact of unsustainable practices on biodiversity, current efforts did not succeed in achieving global goals for example the Aichi targets, a set of 20 biodiversity conservation targets adopted by the CBD (Butchart et al. 2016; Díaz et al., 2019). Accordingly, there is an urgent call for a long-term systemic change in social-ecological systems, also referred to as transformative change, to achieve a sustainable future (Díaz et al., 2019; Rockström, 2009; Martin et al., 2022; Secretariat of the Convention on Biological Diversity, 2020).

Creating positive and inspiring visions is an important element in the process of initiating and navigating transformation (Schaal et al., 2023; Wiek & Iwaniec, 2014). These visions allow individuals to express their values and aspirations, imagine future possibilities, and take action to create desirable futures and drive positive change (Miller et al., 2013; Pereira et al., 2018a; Rana et al., 2020). The primary objective of envisioning possible futures is to make better-informed decisions now and inspire action to shape the course of our future (Biggs et al., 2021). To direct transformative change to a future in which nature is protected and restored, there is an urgent need to develop positive visions that focus on nature and incorporate people's diverse value perspectives (Pereira et al., 2020; Rosa et al., 2017; Schaal et al., 2023). Currently, there are only a few scenarios focusing on nature and its contribution to humans which also makes it hard to generate models predicting these aspects (Pereira et al., 2020). Different viewpoints on society’s relationship with nature have been insufficiently debated although they aid to recognize the plurality of how we value and relate to nature and thus address conservation research from different angles (Peterson et al., 2018; Schaal et al., 2023; Sharpe et al., 2016).

To enhance the development of scenarios that address nature and its contribution to humanity, the Task Force on Scenarios and Models of the Intergovernmental Science-Policy Platform on Biodiversity and
Ecosystem Services (IPBES) developed the Natures Futures Framework (NFF). The NFF provides a tool that incorporates the diverse ways humans positively relate to nature to generate more inclusive scenarios (IPBES, 2022a, Durán et al., 2023). IPBES now calls for testing the framework to explore its potential benefits and weaknesses and to develop scenarios that can inform future assessments and promote actions for sustainable futures for both humans and nature (IPBES, 2022a).

In the context of the Anthropocene, national parks play a crucial role in preserving areas that contain exceptional nature and biodiversity. Given the urgent need to address increasing anthropogenic threats to our environment, it is vital to protect such areas. Moreover, national parks are valuable for studying human-nature relations due to their setting in which humans interact with and are influenced by natural environments (Xu & Fox, 2014). The International Union for Conservation of Nature (IUCN) describes national parks as large natural areas which aim to secure ecosystem functions, traits, and species of that area (International Union for Conservation of Nature (IUCN), 2020; Prip, 2018). The main goal is to protect natural biodiversity by offering a space for species, thus allowing them to maintain large-scale ecological processes (Dudley, 2008). National parks were described to be the most effective habitat conservation method and the recent Global Biodiversity Outlook 5 from the Secretariat of the Convention on Biological Diversity (CBD) shows that protected areas besides other conservation action have reduced the extinction rates of birds and mammals by a factor of two to three (Curry-Lindahl, 1975; Secretariat of the Convention on Biological Diversity, 2020). National parks provide multiple benefits for humans like offering a space for physical and mental recreation and other ecosystem services (Gulsrud et al., 2018).

This applies especially to people living close to or even in national parks, in the case of urban national parks. Approximately 50% of the current world population resides in cities, and as urbanization continues to expand, the area of urban national parks is increasingly endangered. Another consequence is that humans are becoming more and more disconnected from nature, which could lead to the loss of a deep appreciation and understanding of nature (Murray, 2022; Pereira, et al., 2018). It has been observed that urban settings with green areas can evoke positive emotions, decrease feelings of fear and stress, and promote restoration from anxiety compared to urban environments that lack green areas (Murray, 2022; WHO, 2016). Furthermore, green infrastructure in cities or close to cities provides other beneficial services for urban residents like shade, air filtration and climate change mitigation, flood control, and nature education (Borgström et al., 2021). Positive and inspiring visions can help provide a target to achieve sustainable futures for urban parks, which will sustainably provide benefits for both biodiversity and humans.

To develop such desirable and inspiring visions, it is essential to engage with young people’s various values and opinions to contribute to more value-inclusive scenarios (Lim et al., 2017; Rana et al., 2020). Youth are the stewards of our future and integrating them into decision-making, which has not been
implemented adequately so far, provides them with the opportunity to create their future and to highlight what they consider essential (Lim et al., 2017). Furthermore, involving youth can enhance the diversity of people generating knowledge and taking decisions regarding sustainability which is vital for it to be achieved (Rana et al., 2020). Expanding research from only including scientific knowledge but instead incorporating diverse perspectives and values is crucial in future-oriented approaches (Sterling et al. 2017).

In this study, the Royal National City Park (RNCP) in Stockholm, the world’s first urban national park, is used as a case to investigate the diverse relationships between youth and nature. It is a popular destination offering a variety of recreational activities and ecosystem services (Uggla, 2014). Currently, the RNCP faces several challenges including the impact of climate change, which is causing rising temperatures or changes in precipitation patterns which can have significant effects on the park’s ecosystem (Murray, 2022). Another challenge is increasing urbanization, which can lead to the fragmentation of natural habitats and the loss of biodiversity (Hamel et al., 2021; Adem Esmail et al., 2022). By exploring a range of possible positive futures of the park, including those in the perception of youth, stakeholders can be inspired to identify potential opportunities to steer towards a sustainable future of the park.

Using a participatory workshop approach, this study first collects values a group of youth living in Stockholm associate with nature in the RNCP by applying the Natures Futures Framework. Secondly, it captures diverse desirable future visions for the RNCP by projecting those values onto the park’s future using the three horizons framework. The resulting output is then used to inspire and inform park stakeholders, encouraging them to take value-inclusive decisions that foster sustainable transformations.

The study aims to investigate the plurality of youths’ values of nature in the RNCP and incorporate those values into their desirable future visions of the RNCP. Those visions can be integrated into decision-making processes to develop positive and inspiring visions on a local scale that capture the plurality of human-nature relations. Additionally, the study aims to respond to IPBES’ call to further test and apply the NFF in a regional case, to identify its weaknesses and benefits.

To achieve those aims the following questions guide this project:

1. How does youth value the nature of the Royal National City Park?
2. How does youth see the Royal National City Park in a desirable future if nature's values are projected into this future?
3. How can the NFF as a tool for future participatory workshops be improved?
Methods

The core of this study is based on a participatory workshop approach (figure 1). Before the workshop, semi-structured scoping interviews were conducted with park stakeholders to generate legitimacy for the study. After participant selection and planning of the workshop, the one-day participatory workshop was conducted which collected diverse value perspectives and desirable future visions of the park. After the workshop, youths' values for nature and future visions of the park were shared with park stakeholders in unstructured interviews. The participants filled out an anonymous reflection survey after the workshop to collect feedback on the workshop task and especially on the NFF to identify its strengths and weaknesses.

Figure 1: Overview of the procedure of the study. RQ refers to the research questions mentioned above.

The following section will provide a background on participatory scenario planning, the frameworks applied in this study, and information on the case study. Moreover, the stakeholder engagement is described, including the scoping interviews to develop a clear understanding of the case, and the post-workshop interviews to collect stakeholders' feedback on the workshop results. A detailed presentation of the workshop process will also be provided, including the reflection survey and the analysis of the workshop outcomes. Definitions of key concepts used in this study and not explained in depth in the methods can be found in appendix D.

Scenario planning

Scenario planning has become more popular in academic research due to the growing uncertainties of the Anthropocene (Pereira et al., 2018a, Kuiper et al., 2023). By incorporating different epistemologies into scenario construction, the plurality of diverse potential future outcomes can be developed which helps to understand how decisions may impact the future (Bengston, 2019; Biggs et al., 2021; Curry, 2012). For decision-makers facing uncontrollable and inevitable uncertainty, scenario development provides a valuable tool to create alternative pathways to develop more resilient plans and guidelines (Biggs et al., 2021; Peterson et al., 2003; Raudsepp-Hearne et al., 2020). Scenarios have already been applied in several environmental evaluations like the Intergovernmental Panel for Climate Change
(IPCC), the Global Biodiversity Outlook (GBO), or Millennium Ecosystem Assessment (MA) to assess for example how reduced biodiversity or climate change affects our population on a global scale (IPBES, 2019).

There are several approaches on how to develop scenarios (Peterson et al., 2003), here a participatory approach is used. Participatory scenario planning (PSP) allows participants to collaboratively explore and create visions of the future in a way that diverse groups of people can come together and share their ideas, values, and perspectives. By engaging in dialogue, participants can identify shared goals and develop strategies to achieve them rather than relying solely on experts or decision-makers to predict a plan for the future. Scenarios that are based in a specific location and involve active participation are crucial to foster transformative change due to their ability to incorporate a variety of local perspectives, knowledge, and interests (Kuiper et al., 2023; Oteros-Rozas et al., 2015). Visions are an important part of scenarios as they represent the desired destination in the future and certain goals and targets we want to achieve (Rockström, 2009; Wick & Iwaniec, 2014).

This study applies a participatory visioning approach in a future workshop to jointly collect aspired future visions. Those visions serve as an inspiration and information for pathways that lead up to those visions and are the first step in enabling the development of scenarios (Wick & Iwaniec, 2014). Using a participatory visioning approach advances the imagination and hope about positive nature futures and leads to a stronger commitment and accountability to taking action among participants (Schaal et al., 2023).

**Youth**

According to the Oxford English Dictionary, the term youth describes “the time of a life when a person is young, especially the time before a child becomes an adult” and youth are considered a group of young people (OED, 2010). According to psychologist Charlotte Buehler (1933), youth defines the period between gaining puberty, physiological maturity, and gaining social maturity which provides a time for experimenting with ways to be adult (Gill, 2009). In this research, the term youth describes a group of people that are considered young early career professionals in the transition phase towards adulthood. Personal experiences from previous work with youth already displayed youth's energy and motivation regarding decreasing human impacts and issues that endanger their future and creating a change towards more sustainable futures. The enthusiasm young people possess considering the creation of a positive future motivated me to focus on youth in this study. Moreover, young individuals have not been included sufficiently in participatory scenario processes yet (Lim et al., 2017). However, thinking about the future in an uncertain world can be frightening and paralyzing. A concerning assessment by the International Labor Office (ILO) reported that more than a bisection of youth aged 15 to 29 years old living in developed countries think about their future work life with anxiety or with insecurity (ILO, 2017).
Hence, involving young people in creating aspiring visions of the future can help them understand their ability to transform toward more sustainable futures (Lim et al., 2017).

**Theoretical frameworks**

This section describes the two frameworks which were applied during the workshop to capture (1) the plurality of youths’ values for nature in the RNCP, and (2) youths’ diverse visions of the RNCP in a desirable future.

**Natures Futures Framework**

The Natures Futures Framework (NFF) is an interactive tool that captures the plurality of positive relations between humans and nature (Kuiper et al., 2022; Pereira et al., 2020). The Task Force on Scenarios and Models of IPBES developed the NFF to improve scenarios and assessments for nature and its benefits to humans (IPBES, 2019). Besides being an applicable framework for scenario planning and modeling, the NFF assists in the creation of novel scenarios that envision positive futures for nature and its benefits to society while allowing diversity to thrive as nature can be valued and appreciated differently across cultures and societies (Pereira et al., 2020). It summarizes three ways humans value nature, aligning with the central values of positive human-nature relations identified by IPBES (Chan et al., 2016; IPBES, 2015). These values distinguish intrinsic, instrumental, and relational values which were given the following descriptive names (figure 2):

- **Nature for Nature** (NfN), in which nature is valued for its own sake, and preserving its variety and functions is of fundamental importance (intrinsic value).

- **Nature for society** (NfS), where nature is valued mostly for the services and benefits that people gain from it, leading to optimization of multiple uses of nature (instrumental value)

- **Nature as Culture** (NaC), in which humans are seen as an essential and integrated part of nature, and the reciprocal relationship between people and nature is valued (relational value).
Figure 2: The structure of the NFF represents the main value perspectives on how humans and nature are positively related.

Existing scenario approaches are limited in their ability to incorporate diverse values related to conservation biology (IPBES, 2019). Using the NFF in the development of scenarios and models to inform decision-making regarding the conservation of ecosystems offers two novel approaches by (1) emphasizing the diversity of potential values of nature, and (2) including the plurality of values into the development of scenarios and models (IPBES, 2019; Kim et al., 2021; Pereira et al., 2020).

Here, the NFF investigates multiple values youth appreciate about nature in the RNCP. It supports the identification of aspects in the RNCP that should be highlighted when scenarios are developed and enables the creation of more value-inclusive decision-making (IPBES, 2019; Palacios-Abrantes et al., 2022). Furthermore, the use of the NFF supports the execution of IPBES assessments by fostering IPBES' main beliefs of including local knowledge and ensuring effective and just participation (IPBES, 2019).

Three Horizons Framework
The Three Horizons Framework (3H) is a simple tool often used in transformation and future visioning (Sharpe et al., 2016). It supports the identification of several plausible and desired futures and links them with the present (Curry, 2015; Curry & Hodgson, 2008). As shown in figure 3, each horizon of the framework represents an independent system. The viability of each system in a changing external environment changes over time: a prevalent first horizon changes to an evolving third horizon through transitional dominance of the second horizon (Sharpe et al., 2016). The first horizon illustrates the current “business as usual” which is losing fitness over time. The third horizon characterizes an evolving future that grows innovative ways of matching the emerging conditions of the external environment. The second horizon is an unstable transition phase, providing a space for innovation, discussion, and
conflicts between different values and competing, preferred futures of actors (Curry, 2015; Sharpe et al., 2016). The 3H framework has already been applied in various settings ranging from achieving the Sustainable Development Goals (SDGs) (Collste et al., 2019) to the issue of energy security (Curry & Hodgson, 2008; Sharpe et al., 2006) and envisioning positive future scenarios (Kuiper et al., 2022; Pereira et al., 2018a).

Figure 3: The Three Horizons framework illustrating the prevalence of the three different horizons over time. H1 (red) is the first horizon which is business as usual that is currently dominant. H3 (green) is the third horizon, a system that gains fitness over time and refers to multiple potential desirable futures. H2 (black) is the transition phase between the present and the future, focusing on developing viable patterns that facilitate required changes.

Here the 3H framework is used to collect future aspirations, inspirational practices in the present that can be seen as “pockets or seeds for the future” and present concerns of the Royal National City Park from youths' perspectives. However, this study focuses only on the first and third horizons due to limited time.

Case study description
This study focuses on the Royal National City Park in Stockholm. In 1995, the RNCP was established by unifying a series of smaller parks, green areas, and water bodies, which had previously lacked legal protection, into a 27-square-kilometer large park (figure 4). Followed by the introduction of a specific law in the Environmental Code it was stated that any new developments or facilities within the park must not interfere with the landscape or natural environment or cause any damage to the park's natural
and cultural qualities (Murray, 2022). The formation of the park was primarily due to pressure from various groups and non-governmental organizations and can be seen as a local reaction to the loss of green space. In addition to its biological values, the RNCP also holds significant historical and cultural values (Murray, 2022). Kungliga Djurgårdens Förvaltning, Statens Fastighetsverk, Solna Stad, Norrmalms stadsdelsförvaltning, and Akademiska Hus are responsible for the management of the park’s land and the development of buildings and the municipalities of Solna, Stockholm, and Lidingö are accountable for constructions in and around the park. Additionally, different associations (Förbundet för Ekoparken, Stockholms sjögård, Världsnaturfonden WWF, Kommittén för Gustavianska Parken, and Haga-Brunsvikens vänner) work to protect the park as it is an ecologically important corridor for the dispersal of numerous species (Royal Djurgården, n.d.). The RNCP offers diverse habitats and inhabits rare and threatened species, some of which are connected to the old oaks that can be found in the park (Uggla, 2014). Approximately three-fourths of the wildlife and vegetation of mid-central Sweden can be seen in the Royal National City Park (Murray, 2022).

Being the first National City Park, the Royal National City Park offers an interesting study case. High biodiversity levels in the park provide the basis for resilient environments and the supply of ecosystem services, which improve the health of urban populations (Elmqvist et al., 2003). Anthropogenic threats such as growing urbanization, increasing biodiversity loss, and climate change expand the challenges the park faces. Therefore, there is a call for a sustainable transformation to use its benefits sustainably in the future. There have been no future studies conducted regarding the RNCP and the proximity to the Stockholm Resilience Center and Stockholm University offers additional benefits to use this park as a case study.

**Stakeholder engagement**

**Semi-structured scoping interviews**

Semi-structured scoping interviews with three RNCP stakeholders before the workshop provided a strong foundation and legitimacy for the subsequent youth workshop. Associations that work to protect the park, as well as organizations that manage the park and its buildings, were identified online and
contacted via mail (appendix table A.1). The interviews were conducted both in-person and online and were recorded and transcribed. During the interviews, stakeholders received questions related to their involvement in the park, and their perspectives on the role of youth in shaping the park’s future (appendix table A.2). The interviews uncovered a gap in youth involvement in the park, which provided a clear motivation for the workshop to focus on engaging young people. Additionally, the stakeholders' curiosity and interest in the study underscored the importance of the workshop's potential impact and the resonance of its output. During the interviews various challenges the park faces in the future were identified, which highlighted the need for sustainable transformation and further emphasized the significance of the youth workshop (appendix figure A.2). Furthermore, the interviews served as a primary tool to inform stakeholders that this project is taking place and to stimulate their interest in pursuing the topic.

Unstructured post-workshop interviews
After the workshop, unstructured interviews were conducted with four park stakeholders to share youths' values for nature and their desired visions for the future of the RNCP and collect their feedback on the output. Stakeholders who were already interviewed in the scoping interviews and others who were selected online, depending on their involvement in the park, were invited to an online meeting via mail. After the presentation of the results, stakeholders were invited to share comments and feedback on the output. These interviews built upon previous interviews and sought to meet resonance for the workshop output by informing and inspiring park stakeholders with youths' values and visions for the park’s future. Moreover, this is an important step to acknowledge the time youth sacrificed for the workshop and ensure that their perspectives and voices are seen.

Workshop process
The participatory workshop represents the core of this study and serves as the main data collection (figure 1). The workshop aimed to (1) capture what youths value about nature in the RNCP, (2) collect youths' desirable future visions of the RNCP, and (3) further test the NFF. Therefore, a group of 15 youth between 22 and 26 years participated in a one-day futures workshop which consisted of four distinct phases which will be explained in more detail in the following section. The workshop consisted of plenary sessions in the beginning and continued in three subgroups working in parallel to generate the main data.

Participant selection
Swedish youth organizations as well as individual members were invited and asked to share the invitation to the study among youth in their networks. After sending out invitations to youth representatives from Swedish organizations, snowball sampling was applied among my network. Criteria for participation were firstly to live in Stockholm to make sure that participants are related to
the RNCP, and secondly, to not be older than 26 years. Besides youth representatives from Symbios, Klimastudenterna, Fältbiologerna, Jordens Vänner, Svenska Lottakåren, and Skogs Upproret, individual students with diverse backgrounds including biology, environmental and sustainability studies, arts, political sciences, and geography participated (appendix, table C.1). It was aimed to cover a broad diversity among participant demography. Due to low response rates to workshop invitations, there was little influence on participant selection (appendix, figure C.1). Participants were provided with preparatory information to familiarize them with the workshop aims and structure before the workshop (appendix E).

Facilitation

Three researchers from the Stockholm Resilience Centre supported the facilitation of the workshop. Each group was assigned a facilitator who ensured that discussions were proceeding and that every group member could contribute and share opinions to acknowledge diverse perspectives. Every facilitator was provided with note-taking templates and captured participants' general discussions, disagreements, and difficulties during the workshop. Furthermore, a graphic facilitator participated in the workshop and illustrated the results afterward.

Phase 1: Introduction and setting of the scene

Once the participants were welcomed at the SRC, they shortly introduced themselves with their names and their relation to nature, to already induce thinking about their emotional connection with nature. An ice-breaking exercise was used to release the tensions of participants before they were introduced to the workshop's aims and the concept of future thinking and participatory scenario planning. To gain a general idea of youths' perception of the park, participants were asked to name the first word that came to mind when thinking of the RNCP before its introduction.

Phase 2: Youth values of nature and introduction of the NFF

Phase two focused on youths' values of nature in the RNCP. Youth were asked to recall their values for nature in the RNCP, in the beginning, to be guided by and incorporate their values into their visions in the following visioning exercise. At first, participants were asked to think about what they appreciate about nature generally. With a more meditative approach, they were invited to place themselves back into a situation where they valued nature and try to feel how it felt and remember what it looked like. Subsequently, they were asked to describe what they valued particularly about this particular moment back in nature and what they appreciated the most to enhance a reflection about participants' relation with nature. Individual answers were captured on post-its and collected on a wall.

After that, the Natures Futures Framework with its different ways of how humans can be positively related to nature was introduced. Each participant was encouraged to capture what the role of nature in the park is for them on a post-it and place themselves in an imaginary NFF triangle in the middle of the
room according to where they would map nature's role the NFF triangle. Three groups of four to six people were formed depending on where they positioned themselves in the NFF and youth discussed their allocation with their group members. This way of creating the groups aimed to increase the similarity of the perception of nature within group members and the diversity across the groups. Each group gave themselves a name and subsequently collected more values they see in nature of the park and mapped them in the NFF triangle on post-its. Every group member was allowed to individually place post-its on the framework without consent from their group members. However, the group mainly discussed the post-it content and its allocation before placing it. Using the NFF triangle as an initial point was meant to improve the chances of the visions centering on particular views of nature.

**Phase 3: Visioning exercise and introduction of the Three Horizons Framework**

Before the visioning exercises, the participants were familiarized with the 3H framework. The majority of time was determined for the visioning activities, which were divided into three tasks. The first task focused on the third horizon in the future, which is the desirable future of the park towards which we want to transform. Secondly, the groups looked at the third horizon in the present and discussed trends or initiatives now in the present which possess the capacity to grow a positive future. Lastly, the groups focused on the first horizon and things that must be changed to achieve a desirable future. The order of the horizons was chosen this way as it was aimed to create normative scenarios which start with opening the view of potential futures before looking back to see how this may develop from the present.

For each task post-its in a different color were provided, which were used by the participants to capture ideas and visions and allocate to the different horizons. A list of questions was presented for each task to guide the participants’ thinking (figure 5). Furthermore, a glossary of terms was provided for the groups to ensure a common understanding of the used terms. Again, ideas were discussed among group members before a post-it was placed on the framework. Once all three tasks were discussed, each group was invited to come up with several creative newspaper headlines or social media posts about the RNCP in a desirable future, describing specific characteristics of the park in their desirable future.
Phase 4: Group presentations and reflection

Each group shortly shared the findings about their desirable visions of the RNCP and the park's newspaper headlines/social media posts in a positive future. With this, the time the participants put into the workshop and the ideas they have come up with were appreciated and acknowledged. At the end of the workshop, participants were asked to provide feedback and reflections of the workshop in oral form as well as by filling out an anonymous online survey with 12 questions, to generate more authentic and genuine feedback.

Analysis

Thematic clustering (RQ1 and RQ2)

All outputs from the participatory workshop were photographed and digitized onto a Miro page, an online collaborative whiteboard platform, allowing easy access and analysis.

Answers to the one-word check-in were transcribed and captured in a word cloud (appendix figure B.7). During the second workshop phase, it was first collected what youth values about nature generally. The individual answers were then summarized in themes using inductive coding. A word cloud was generated to represent the frequency of each theme mentioned. After the formation of the groups, youths' diverse values for nature in the RNCP were collected using the NFF. Key themes were identified through in-vivo and inductive coding, and their location within the NFF triangle was analyzed and compared across the three groups. An Excel spreadsheet was used to summarize the aspects of nature in the RNCP valued by each of the three groups (appendix table B.3). Overlapping values were summarized with inductive codes. Single-mentioned aspects were given in-vivo codes. A summarizing figure of the NFF triangle that incorporated the allocated positions of the identified codes was illustrated.
The group output that was generated during the third phase of the workshop using the 3H framework was coded inductively in Excel by comparing and summarizing similar themes mentioned among the three groups for each horizon (H3 future, H3 present, and H1 present) (appendix table B.4). For each group, four newspaper headlines, as well as some future visions, were illustrated.

**Reflection survey analysis (RQ3)**

After the workshop, an anonymous online survey with 12 questions was shared among the participants to collect more detailed and genuine reflections about their experiences. The survey aimed to gather general feedback about the workshop, as well as more detailed feedback on the different tasks and frameworks that were applied. Furthermore, it also helped to collect more information about participant demographics (appendix figure C.1). The survey consisted of seven questions on a five-point scale ranging from strongly disagree to strongly agree, along with five open-ended questions. The answers to open-ended questions were analyzed and coded in Excel for negative and positive feedback, particularly regarding the NFF.
Results
Youths’ diverse values for nature

This section describes diverse ways youth relate positively to nature in general and to nature in the RNCP. To the question "What do you appreciate about nature in general?" natures calmness was most often mentioned. Furthermore, aspects related to sound were named frequently, like bird sounds or sounds of wind. Besides ecosystem services such as fresh air and biodiversity, recreational activities connected to movement like swimming, cycling, running, or walking were named repeatedly. Further thoughts about the perception of nature including its beauty, different colors, and changing characteristics were stated (figure 6).

The role of nature in the RNCP
The question “What is the role of nature in the RNCP for you?” was answered individually by writing on a post-it and allocating themselves in an imaginary NFF triangle on the floor according to where participants mapped their answers. The whole space of the triangle was covered, expressing youths’ diverse relations with nature in the park. To ensure relatively similar value perspectives among group members and more diverse perspectives among the groups, three groups were formed consisting of participants standing close to one another as illustrated in figure 7.
Participants of *Nature* (group 1) placed themselves in the “nature for nature” area. They described the role that nature in the RNCP has for them as a space to breathe, in which humans and nature co-live and where nature is in balance, offering recreational values such as fresh air, calmness and other benefits for society such as museums and cafés.

Participants of *Bergshamra Gang* (group 2) were located in the “nature as culture” area and mentioned biking through the park to appreciate nature and be more in tune with the seasons. They emphasize the benefits of connecting with nature, such as calming the mind and the promotion of a calmer city life.

Participants of *Tree* (group 3) were located in “nature for society” and valued ecosystem services like fresh air, shade, and clear groundwater as well as recreational activities they can perform in the park such as walking and jogging and generally that the RNCP offers a space to escape the city life.
Youths' values of the RNCP's nature

All groups continued collecting more characteristics they appreciate about nature of the RNCP on post-its and placed them in the space of the NFF triangle. Even though each group had a higher affinity for one corner of the NFF triangle, they mapped properties covering the whole area of the NFF.

Each group valued the natural beauty and resources of the park, including biodiversity and different animals like deer, birds, insects, and plants, mapping them in the NfN area. Furthermore, the connectivity between plants and animals in an urban area and diverse habitats were appreciated and mapped in the NiN space. Other expressions mapped in the NiN area were “our world”, “beauty”, and “protect what is there”.

Participants among all groups value recreational amenities and mention the benefits of spending time in the park. For example, it offers a space for sunbathing, movement, or picnics, which were mapped in the NfS area. Other aspects mapped in this area were related to ecosystem services, like fresh air, food
growing, CO₂ sequestration, and tourism like cafés, castles, or museums. Other expressions in the NfS area were “curiosity and discovery” and “safety”.

The most mentioned aspect in the NaC area was calmness and the possibility of reconnecting to nature and having a break from the busy city life. Two groups also mapped the change in the NaC area, that nature is “ever-changing” and valued that you can “watch the forest change with seasons”. Other expressions mapped here were “euphoria”, “free!”, and “wonder”.

Nature focuses more on the intrinsic value of nature, appreciating its beauty and complexity for its own sake as most post-its were placed in the NfN area. Bergshamra-Gang emphasizes the instrumental value, including its practical uses for entertainment or food. In contrast, Tree emphasizes the importance of protecting and preserving nature, valuing biodiversity, connectivity for plants and animals, and unspoiled habitats. The specific aspects of nature each group values differ from each other, such as Nature’s emphasis on silence and old trees and Tree’s focus on diversity and connectivity for plants and animals. Bergshamra Gang highlights social aspects of nature, including opportunities for socializing and recreating. At the same time, of the other two groups focus more on individual experiences and connection with nature (appendix table B.3). A NFF, particularly for the RNCP including youths’ values for its nature is illustrated in figure 8.

**Youths' diverse desirable future visions of the RNCP**

In the third workshop phase, the previously collected values were incorporated into the dialogue about desirable futures for the RNCP within each group. Besides characteristics of the RNCP in a positive future (H3 – desirable future), positive initiatives that already exist (H3 – what needs to grow) and things that need to be changed in the present (H1 – what needs to go) to achieve desirable futures were discussed (figure 9).
**H3 – Desirable future**

All three groups want the park to have higher levels of biodiversity, including both plant and animal species. Additionally, they desire more recreational amenities, such as benches, picnic areas, or ladders for swimming. *Nature* phrased it as “opportunities to exist in natural space”. *Nature* and *Bergshamra Gang* are advocating for less pollution, including reduced light pollution by using sensor lights on main paths. Both groups *Bergshamra Gang* and *Tree* imagined fewer cars or even no car zones and no further constructions of highways but rather accessibility through public transport. Additional characteristics of the RNCP in a desirable future cover more community gardens, publicly available fruit trees, and greater social involvement. *Nature*, in particular, envisions the park as a venue for activities that enable visitors to observe and learn about the ecosystems. Moreover, educational signs about the species and information explaining the value of nature should be displayed throughout the park to increase understanding of the environment and park resources. The park should be accessible to everyone, and nature should be given priority (figure 10). To prevent future construction, stronger protection laws should be implemented. Furthermore, the park should expand and be connected to other parks by integrating the park protection policy into a broader city policy to create diverse habitats only for nature.
Tree wishes to increase public spaces by making royal buildings accessible. The different desirable future visions are illustrated in figure 10.

*Figure 10: Illustrated desired future visions of the RNCP by the different groups. E. Wikander/Azote*

**Newspaper headlines**

During the last exercise, the groups created newspaper headlines of the RNCP in a desirable future. All three groups came up with several creative headlines, some of which are represented in figure 11. Most headlines covered the same themes that came up during the visioning exercise using the 3H framework. *Nature’s* headlines covered local food production, recreational activities like swimming and walking, and biodiversity.
Bergshamra Gang’s headlines also cover the aspect of biodiversity, as the discovery of an extinct animal was described. Moreover, other positive developments like a car-free zone and increased food self-sufficiency were mentioned. A clean air record, a national holiday for sustainable transportation, and community saunas were envisioned aspects of the RNCP’s future.

"New National Holiday alert: the king hands out homegrown fika to all who walk or bike 3 km in RNCP"

Besides focusing on limited light pollution and an extension of the car ban, Tree’s headlines also address social issues like housing and caregiving responsibilities for young people. In their visions, the park becomes more public and inclusive with co-living spaces and community engagement.

H3 - What needs to grow
Looking back into the present, all three groups cherish the park’s already existing biodiversity, including botanical gardens or keystone species. Moreover, existing regulations to protect breeding or feeding grounds and the inclusion of species perspectives were appreciated. Furthermore, all groups would like to grow transparency into a desirable future, creating more awareness of the park, implementing more signs and maps, and more transparency regarding work that is done in the park. Other mentioned aspects from groups Tree and
Nature were connected to democracy, like the “right of public access” or participative planning and that citizen assemblies are created to decide about the future of the park. Education and activities or initiatives in the park, like Rosendals Trädgård, were identified as something that can grow into the desirable future of the park. Bergshamra Gang and Tree additionally appreciate local food production through community gardens and publicly available food trees. Bergshamra Gang cherished the access to bike-sharing models. Nature wants to maintain waste sorting, swimming access, and living spaces within park borders, creating a diversity between activities and ecosystems at specific locations.

H1 - What needs to go
Moving to the first horizon, all groups agreed that ongoing urbanization needs to change. Landscape fragmentation, parking spots, surface sealing, and the pressure for new buildings were mentioned among the groups. All three groups agreed that profit orientation, meaning focusing on economic interests and business money while neglecting nature, must be phased out. Pollution, including noise, light, and garbage, was something all three groups wanted to change as well. Additionally, inequity was mentioned by all groups. Regarding this aspect, the groups have mentioned that there is inaccessibility to living spaces in a political context and that activities in the park are primarily pursued by the upper class. Additionally, it has been noted that a lot of land in the park is privatized. Nature and Tree want to revisit the law and generate equal funding for different park areas besides phasing out short-term planning and the lack of mobilization. Lastly, Nature wants to change the limited awareness of the park's size, of its biodiversity, and activities.

The NFF as a workshop tool
The third aim of this study was to apply the NFF and further investigate its utility as a tool for future workshops. Therefore feedback was collected from the participants orally and through an anonymous online survey. The workshop's general impression was positive; participants agreed that it was easy to understand the tasks and frameworks, felt comfortable sharing their opinions, and could contribute to discussions (figure 12). All participants strongly and partly agreed that they gained new insights about the RNCP. However, less than 15% strongly agreed that they felt more empowered to bring about a positive future after the workshop.
Even though all survey respondents either partly or strongly agreed that the NFF was easy to understand, open-ended questions and notes from the group facilitators revealed that some youth had difficulties understanding the NFF triangle, particularly when differentiating between the different values (see quotes below). However, oral feedback after the workshop confirmed that youth appreciated a new way of reflecting on their relation to nature from different perspectives.

“… the first task with the triangle I had problems understanding”

“The toughest part was with the nature’s future exercise.”

“I found the definition of “Nature for Nature” and "Nature for Culture" in the Nature’s Futures framework not super clear”

“It was hard to differentiate where concepts or experiences belonged on the pyramid with nature for nature, nature for society, and nature as culture”

Figure 12: Participants evaluated the workshop on a five-point scale from strongly disagree to strongly agree (n=14). Open-ended questions are provided in the appendix (table C.2).
Discussion

Diverse value perspectives

This study uncovered diverse aspects the participants value about nature in the RNCP. All three groups mapped characteristics across the whole space of the NFF, including overlapping areas of different value perspectives, supporting the coexistence of the three value dimensions (IPBES, 2022b). In summary, the RNCP’s species richness and diverse habitats were valued and mapped in the NfN area, while ecosystem services and recreational amenities were valued and mapped in the NfS area. In the NaC area, connectivity and a sense of calmness were emphasized. As each group participant contributed with their individual value perspectives, the summary of all three groups highlights the diversity of how a group of youth can relate to and appreciate nature.

It is worth noting that the values the participants expressed about nature in the park are partly not unique to the RNCP like, for example, that it offers a “place to calm down, free your head and connect to nature” applies to nature in general. Furthermore, their responses to the questions “What do you appreciate about nature generally?” aligned closely with what they appreciate about the park. This suggests that most of the values identified in this study are not specific to the RNCP and could be more broadly applied to nature in other contexts. Nevertheless, it also reveals that the RNCP fulfills its ability to represent the values people generally seek in nature, further emphasizing the park’s significance.

Looking at other studies that collected youths’ values for nature, Rana et al. (2020) showed that especially participants who placed themselves in the NaC area emphasized the significance of traditional knowledge and indigenous epistemologies, which did not come up among participants in this workshop. This could be because participants of this study might not have been familiar with or exposed to such perspectives, or they might not have considered them relevant in the park context. However, values mapped in the NaC area in this study help broaden the understanding of the NaC perspective, as it goes beyond the traditional and indigenous knowledge often used to define it, which may not always be relevant in specific contexts. Another notable contrast between the two studies is that only participants in the NfN area in Rana et al.’s study mentioned aspects of protected areas and their purpose to preserve biodiversity for its intrinsic value. Conversely, in this study, all groups referenced the park’s protected status and its intrinsic value as it is explicitly designed to conserve biodiversity. Rana et al. demonstrated that participants who identified with the NfS corner emphasized the instrumental value of nature, specifically regarding ecosystem services. Here, all groups regardless of their initial placement in the NFF valued ecosystem services. This suggests that in the context of a protected area like the RNCP, the instrumental value of nature for sustaining ecosystem services plays an important role. However, Rana et al. (2020) validated a change in values shifting towards an ecocentric perspective involving the conservation of nature as a priority instead of exploiting it, which aligns with the findings of this study.
Comparing the results with a study on another national park in the Netherlands, which also covers urbanized regions and includes a city, Kuiper et al. (2022) found that among key stakeholders of the Nationaal Park Hollandse Duinen (NPHD), the NfN perspective was not widely represented. On the other hand, in this youth workshop, two of three groups placed most post-its in the NfN area, highlighting the importance of biodiversity and the intrinsic value nature has for youth (appendix B.2).

NPHD stakeholders’ nature values were most densely concentrated in the NfS corner with aspects like “food production”, “relaxation”, and “recreation”, which were also aspects mentioned by youth in this study in the NfS area (“food growing”, “recreational activities”). However, youth mapped relaxation in different areas of the triangle, as Bergshamra Gang expressed it as “Feeling peaceful and calm” in the NaC corner, and Nature as “calm, silent, not many people” in the overlapping area between NfN and NaC. Regarding the NaC area, stakeholders of the NPHD mapped “identity”, “part of nature”, and “cultural landscape heritage” here. The first two aspects are similar for youth in this study, as they mapped “feeling connected to Earth”, or “sense of place”, and “connection to life” in the NaC area. However, cultural landscape heritage did not come up among youth in this study, which stakeholders highlighted in the post-workshop interviews. One said, “I am astonished that the cultural aspect is not that big among youth, which is very important for older generations”, as the importance of the park’s historical and cultural heritage was only mentioned once, in the context of “walking in others footsteps”, which surprised stakeholders when sharing the workshop results with them. Before the workshop, different stakeholders of the RNCP identified several benefits of the park (appendix figure A.2), which included the cultural heritage and historical landscape. This suggests that the younger generation values nature in the park differently from older generations, as all stakeholders participating in this study were above 50. These findings highlight the importance of involving youth’s values and relation to nature, as their perspectives vary from those of older generations (Hackenburg et al. 2019).

The insufficient inclusion of youth and different cultural backgrounds, especially in environmental scenarios, has been criticized in the scenario approach (Raudsepp-Hearne et al., 2020, Rana et al., 2020). However, this workshop only captures the different value perspectives of a certain youth group on a local scale at a specific time. Although some participants were members of Swedish youth organizations and thus represented a larger group of youth in Stockholm, these results cannot easily be generalized to the larger population. Yet, this study aimed to be exploratory and define a set of priorities to guide the conversation and decision-making rather than achieve high representativeness.

Values are often considered the “inner dimension of sustainability” as they incorporate individuals’ mindsets and emotional attachments and influence how individuals interact with or care for the environment and need to be considered when guiding action to achieve transformative change (Martin et al., 2022). Chapter five of the IPBES value assessment describes two distinct ways of working with values to achieve transformative change towards sustainability. The first is altering people’s value systems by promoting sustainability-aligned values, which are connected to transformative change and
the accomplishment of a sustainable future. The second is fostering a diverse and plural valuation of nature and incorporating it into decision-making, which this study aimed to achieve (Martin et al., 2022). Collecting youth values contributes to a broader understanding of how they relate to and use the RNCP which is valuable information for stakeholders regarding future decision-making. In addition, achieving a plural valuation of nature can deepen conversations and strengthen the validity of decisions which is essential for promoting fundamental change (Chan et al., 2020; Martin et al., 2022; Palacois-Abrantes et al., 2022). Moreover, participatory processes like this workshop that capture shared values can stimulate a critical awareness of the current system and promote empowerment among participants (Grenni et al., 2020).

**Development of visions**

After discussing associated values with nature, youth focused on desirable future visions and the presence of the RNCP using the 3H framework. Every group envisioned more biodiversity and recreational amenities in a positive future for the park. Moreover, they visualized less pollution, fewer cars, and better accessibility, for example, through public transport. In addition, they envision the park as a place for educational activities and community involvement. The participants appreciate the existing biodiversity and regulations but want more transparency and democracy in the park’s management. Furthermore, they want to phase out profit orientation and pollution and address inequity by making the park more accessible for everyone. Lastly, awareness and funding for the park should be increased.

Even though each group was initially placed in one corner of the NFF triangle related to a certain value perspective presented in the NFF, their visions recognized the diversity of values. One explanation for this could be the participants varying views on nature and that the introduction of the NFF has broadened their understanding of the diversity of nature’s values (Rana et al., 2020).

The number of post-its on each horizon varied among the groups. *Bergshamra gang* placed the least post-its on the framework, which could be due to the smaller group size. Additionally, *Bergshamra Gang* was the only group with no representatives from youth organizations, which could limit the diversity of perspectives and priorities among the participants. As discussed above, the formation of the groups was only done based on the participants’ positions in the NFF triangle, and no attention was paid to individuals’ backgrounds or if they are youth organization representatives.

Participants did not have any difficulties understanding the 3H framework. The main challenge when developing visions was the lack of knowledge about the park. Primarily when focusing on the present and evaluating what already works well and what youth wants to maintain or change to achieve their desired future, the limited knowledge about the park was a restricting factor, which was also confirmed in the feedback survey (appendix table C.2). This could explain why each group placed the minor post-its on the first horizon. Collected future visions that mention fewer cars, increased accessibility, and
local food production (figure 9 & 11) closely align with three of the four focus areas of the sustainability work at Royal Djurgården, the most southern part of the RNCP. The Sustainable Royal Djurgården focuses on “a fossil-free and traffic-smart Djurgården”, “a sustainable food culture”, “open, accessible and welcoming Djurgården”, and “a world exhibition on sustainability” for the sustainable development of Djurgården (Sustainable Stockholm, 2023). This alignment indicates that the park's current sustainable efforts are relevant and inclusive and address border societal concerns that resonate with young individuals.

The newspaper headlines and social media posts the groups came up with show creative and more detailed visions of the park in the future and cover mainly the same themes as the post-its describing the aspired future. This task of creatively engaging with the future allowed the participants to enhance their thinking about the park's future without limitations and enabled a profound recognition of how the future may look from their perspectives (Pereira et al., 2023; Wiek & Iwaniec, 2014).

Interestingly, none of the visions produced in this workshop focused on technology. Rana et al.'s (2020) youth workshop perspectives acknowledged the potential benefits of technology in building a more resilient future. This could be because in Rana et al. participants were explicitly asked to choose a technological, social, environmental, and economic seed on which they built their visions. In contrast, in this study, the only guidance was to envision the park in a desirable future when incorporating their nature values (Rana et al., 2020). Exploring other millennials' perspectives through research could provide valuable insights into the extent to which technology features their ideas of a more resilient future. Recently, a second IPBES youth workshop has been conducted using the 3H framework. Young individuals were gathered in Germany to collect their perspectives on visions for the future and on transformative pathways towards these futures. Once the results are available, they will provide an interesting opportunity to compare.

The second horizon is an essential part of the 3H framework, as it connects the present and the future and focuses on how we reach the desirable visions (Curry & Hodgson, 2008). However, it was left out of this workshop due to limited time. It is important to mention that the visions of the park in a desirable future generated in this study are not complete scenarios. They represent more loosely articulated targets where youth want to end up and serve as guidance and inspiration for stakeholders when considering alternative ways into the future. Nevertheless, similar studies that applied the 3H framework and included the second horizon like Jiren et al.’s (2021) work on human-wildlife coexistence can inspire stakeholders to achieve the third horizon. In this study, stakeholders in a wildlife management system agreed on the need to create awareness about the significance of wildlife, empower marginalized groups, enhance monitoring and evaluation systems, and balance conservation efforts with improving everyday life. To achieve this future state, stakeholders proposed specific strategies such as expanding tourism, promoting equitable benefit sharing, improving collaborative governance, and empowering local
communities to facilitate transformation. Those strategies could also be applied to the RNCP; if tourism expands, the awareness of the park and education about its biodiversity and importance for our well-being will increase among local people. As one of the stakeholders expressed during the scoping interviews when talking about guided tours in the park: “If you get to know biodiversity, you learn to love it, and what you love, you protect”. Furthermore, empowering marginalized groups, such as youth, and incorporating them into decision-making processes in the RNCP to improve collaborative governance could facilitate transformation towards more equitable futures in uncertain conditions (Pereira et al., 2018a). Another work by Schaal et al. (2023) on positive futures for agricultural landscapes applied the three horizons framework in combination with storytelling over two workshops in south-eastern Australia. Participants developed six pathways, including alternative approaches, advanced methodologies, and novel concepts to reach a desirable future state (2nd horizon). Even though those pathways are related to a different context on a different local scale, two pathways focusing on biodiversity loss and change could be compared with this study. One describes reaching community well-being and engaging younger generations in the community via creating economic opportunities that create connectivity. Generating opportunities in the RNCP that connect diverse groups with the park could result in a diverse engaged, inclusive community benefiting from the RNCP. Secondly, Schaal et al. (2023) describe achieving more resilient and biodiverse ecosystems by integrating biodiversity and soil carbon projects. By implementing such projects in the park, soil health could be improved, which can increase plant growth and the abundance of species, enhancing the park’s biodiversity and ecosystem resilience. In Kuiper et al.’s (2022) study on the NPHD, stakeholders identified for instance, agriculture within the park as a feature of the second horizon. It presents a challenge as well as a possibility to enable positive nature futures in the NPHD. This could also be relevant for this study, as youth envisioned local food production in the RNCP in the 3H exercise and in their newspaper headlines.

Taken together, the findings of this study are regional perspectives of a marginalized group that can help to build more inclusive global nature futures (Rana et al., 2020). It is essential to share those perspectives with people in power to inspire them to accelerate action toward those visions. In addition, Pereira et al. (2018a) and Nygren (2019) highlight the significance of transdisciplinary thinking during uncertain times as well as the co-creation of ways to navigate transformation towards a more sustainable global future through participatory approaches, which involves incorporating various aspirations for change to effectively bring about transformation.

Through conversations with park stakeholders, valuable insights were gained regarding the ongoing work within the RNCP to foster a sustainable future for the park. For instance, Royal Djurgården's sustainable development to achieve a set of sustainable goals, as mentioned above (Sustainable Stockholm, 2023). Moreover, the reception of the Green Destination Platinum award for Djurgården's work which aligns with the SDGs, affirms that the RNCP is successfully advancing a sustainable and just future for the park (Sustainable Stockholm, 2023). Sharing the collected perspectives of young
individuals with park stakeholders can serve as a means to validate their current direction or provide them with additional inspiration to guide their actions. Hence, the RNCP has great potential to support the implementation of the new post-2020 global biodiversity framework and its targets in Sweden to achieve the vision of harmonious coexistence with nature.

The NFF as a workshop tool

The NFF was developed to improve the generation of positive nature scenarios that acknowledge the diversity of human-nature relations. This study applied the NFF in response to IPBES’s call to extend the framework’s use, identify its strengths and weaknesses and improve it for a long-term approach to generating transformative nature scenarios (IPBES, 2022a; Pereira et al., 2020). Thus this study feeds IPBES interest in products that have been developed using the NFF.

Participants mostly agreed that it was easy to understand and use the NFF and appreciated the different ways of thinking about their relationship with nature. Starting the workshop with the NFF opened up youths’ thinking about their relationship with nature and effectively generated diverse value perspectives. However, the reflection survey disclosed that participants had most difficulties understanding the NFF and differentiating between the presented value perspectives, especially with nature as culture and nature for society, which was observed at previous workshops, too (Kuiper et al., 2022). Despite a short introduction to the NFF, the youth was not familiar with the framework yet, and the result shows that personal perception of the three values perspectives differs as similar individual answers were mapped in different value areas of the NFF. This could be due to insufficient explanation of the different value perspectives represented in the NFF, as the majority of negative feedback received was related to the NFF. A more detailed introduction of the NFF along with more examples for each corner, could have increased participants’ understanding of the framework and thus provided a more robust output. Nevertheless, it also helps to understand better how the value perspectives presented in the NFF are perceived and provides valuable information for IPBES to improve the fairly new NFF (IPBES, 2022a).

While there is no optimal approach to using the NFF, experts concur that it is crucial to incorporate diverse viewpoints on nature (PBL, 2019). Combining the NFF with a visioning approach that applies the 3H framework helped to integrate the diversity of value perspectives into desirable future visions. However, a stronger connection between the NFF and the 3H framework by mapping the positive future visions in the space of the NFF triangle could improve the incorporation of participants’ values into their visions (Pereira et al., 2023). Moreover, applying the NFF uniquely enhances the connection between science and policy, which simultaneously empowers a thriving future for humanity and nature and can therefore be seen as a valuable and helpful tool for future workshops. Capturing diverse value perspectives, including those of youth, it’s crucial to effectively discuss the future of our environment.
and reach a consensus on how to create a better future (Pereira et al., 2020). This study generates unique local value perspectives, which when brought together with other local NFF cases, form a basis for a global outlook on positive futures for nature that emphasize the variety of values found in nature (Pereira et al., 2020).

**Directions for future research**

While all participants were fluent in English, which was the workshop’s language, it should be remembered that it was not the mother tongue of most of the youth. This can limit their ability to express themselves fully and bring about a sociological change, as an individual’s sense of values and self-confidence may change using imperfect language (Kokaliari et al., 2013).

Participant selection strongly influences the workshop outcome, and it was strongly emphasized to include a broad diversity of youth in terms of their background, gender, and age (Lauttamäki, 2016; Nygren, 2019). Initially, the aim was only to invite Swedish youth that lives in Stockholm and are active in Swedish youth organizations to ensure that collected values and visions are representative of a larger group of youth. However, due to low response rates to the workshop invitation, the invite was extended to individual and international students that live in Stockholm. As most participants did not grow up in Stockholm and had only lived in the city for 1.5 years, the limited awareness of the park amongst participants was a significant constraint. Participants faced difficulties during the visioning exercise using the 3H framework because they were uncertain about what already existed in the RNCP. If all participants were born in Stockholm and more familiar with the park, they might have a deeper understanding of its challenges and opportunities, which could lead to more nuanced visions for its future. Instead, their vision of the park was more like a general idea of what a national park in the future should look like, which aligns with the transferability of the results mentioned previously in the discussion.

Another restricting factor was the limited time that was available for the workshop. It could have been beneficial to have multiple workshop sessions distributed over several days to give the participants more time to reflect and familiarize themselves with the different frameworks. This workshop took place on a Friday afternoon to ensure that most participants were available and lasted approximately three hours. Even though fika and refreshments were provided it could not be prevented participants got tired and having a hard time focusing, as many of them stated in the reflection survey.

Further research could explore ways to develop more comprehensive visions of the park through the participation of a larger and more representative sample. Including sole representatives of Swedish youth organizations and park stakeholders in the workshop could be a mutually beneficial experience for both the youth and the stakeholders, creating a platform for collaborative and inclusive decision-making. Furthermore, it could provide a more nuanced understanding of the challenges and opportunities the
park is facing regarding sustainable development and identifying strategies for achieving transformative change.

In addition, the outputs of this study could be further analyzed using theoretical frameworks for transformational change, like the leverage point framework, to increase the understanding of where to take action to alter social-ecological systems (Chan et al., 2020). Moreover, similar to Kuiper et al.’s (2022) study, an analysis of the SDGs could be conducted to identify targets that were addressed in the third horizon of this study to investigate how the future visions of the RNCP can contribute to the SDGs to achieve a more resilient future.

**My interdisciplinary journey**

Haider et al. (2018) use the term “undisciplinary” to describe an approach that breaks down disciplinary boundaries and works across multiple fields to tackle complex sustainability challenges. Undisciplinary refers to the state of early career researchers and their journey towards a more collaborative way of thinking and problem-solving while maintaining a strong methodological foundation. Having a broader background in molecular biology, I am used to conducting experiments in the laboratory that yield more or less binary results. Simply said: you follow the manual of your kit, and either you get your expected result or not, which makes the analysis and troubleshooting relatively easy. Not having a solid methodological grounding in qualitative research, it felt rather uncomfortable initially to execute high-quality work in an interdisciplinary field without following clear methodological guidelines. However, I started to embrace my journey with having neither guiding nor restricting boundaries. It was a constant learning process in which I had to reevaluate repetitively what skills I needed for my next steps and where I had to find a good balance between the methodological foundation and epistemological flexibility. I am even happier that the Resilience Center is an excellent place to exchange research and share feedback. I am grateful for everyone who has taken the time to comment along my process.

**Conclusion**

The current research in future studies particularly lacks positive scenarios that prioritize nature and incorporate diverse human-nature relationships at various geographical levels (Bennett et al. 2021; Pereira et al., 2020). There is an increasing need for positive nature futures to guide sustainable development and to engage youth’s perspectives in this endeavor (Lim et al., 2017). This study addresses these gaps by exploring aspects of the Royal National City Park’s nature valued by youth and by collecting desirable future visions for the park based on youths’ values. Youth envisions the park to contain more biodiversity and recreational amenities in a positive future. Moreover, they visualized less pollution, fewer cars, and better accessibility, for example, through public transport. They envision the park as a place for educational activities and community involvement. The presented visions should be
seen as a foundation for initiating discussion on the ideal future from the viewpoint of young individuals. These visions are not completed scenarios but represent a shared goal of where we want to end up. This study shows that it is crucial to include diverse perspectives of young people in envisioning the future as the opinion of young individuals can offer insights that senior researchers may not always consider or have and thus lead to a better understanding of potential nature futures (Hackenburg et al. 2019). Moreover, this study successfully responds to IPBES’ call to extend the usage of the NFF as a workshop tool. While the NFF is a powerful tool for exploring diverse value perspectives for nature, specific improvements are necessary to enhance the understanding among participants. Although the approach presented in this paper is only an initial phase of generating value-inclusive scenarios that inform policymaking, it carries significant potential when implemented in diverse contexts to support conversations on desired future for nature and humanity, as well as strategies to achieve them. What might our future look like if we all embrace our responsibility as stewards of the Earth and work together to build a sustainable and just future for all living beings?
Acknowledgments

First of all, I would like to express my gratitude to my supervisor, Jan, for his excellent support during my thesis work. His approachable demeanor and clear communication made it easy for me to navigate into an interdisciplinary field without prior methodological knowledge. I truly appreciate his guidance and understanding throughout the process. I want to extend my sincere thanks to my fellow master's student colleagues. Their inclusivity and empathy made the experience much more fulfilling. Special gratitude is directed to my thesis group for welcoming me into their group and providing a supportive and inclusive environment. Moreover, I would like to thank Caroline, Therese, and Sophia for their kind and valuable support as facilitators and note takes during the workshop. Finally, I would like to thank all the participants who participated in my workshop, as they made it a fun and enriching experience and provided valuable data for my thesis.
Literature cited


IPBES. (2015). Preliminary guide regarding diverse conceptualization of multiple values of nature and its benefits, including biodiversity and ecosystem functions and services (deliverable 3 (d)). Bonn, Germany: IPBES.


Appendices

Appendix A: Semi-structured scoping interviews

Table A.1: Overview of stakeholder, their organization, and which interview they were part of.

<table>
<thead>
<tr>
<th>Stakeholder pseudonym</th>
<th>Organization</th>
<th>Semi-structured scoping interviews</th>
<th>Unstructured post-workshop interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stakeholder 1</td>
<td>Förbundet för Ekoparken; WWF</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Stakeholder 2</td>
<td>Haga-Brunnsvikens Vänner; Förbundet för Ekoparken</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Stakeholder 3</td>
<td>Förbundet för Ekoparken</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Stakeholder 4</td>
<td>Statens Fastighetsverk</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Stakeholder 5</td>
<td>Kungliga Djurgårds Förvaltning</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Stakeholder 6</td>
<td>Länsstyrelsen Stockholm</td>
<td></td>
<td>√</td>
</tr>
</tbody>
</table>

Figure A.1: Logos of organizations that were involved in this study.

Table A.2: Interview guide for semi-structured scoping interviews before the workshop

- How are you associated with the Stockholm Royal National City Park?
- What do you see as major benefits of the park for humans at the moment?
- What do you see as major challenges when thinking of the future of the park?
- Protected areas and other effective area-based conservation measures should be expanded to cover at least 30% of the planet by 2030 – in your opinion, what impact could this have on the RNCP?
- Which youth organizations do you know?
- Are you aware of any current youth involvement in the park?
- What do you think could be the role of youth in shaping the park in the future?
- If you spontaneously think about a newspaper headline about the park in a desirable future, what would it say?
Figure A.2: A benefits of the RNCP according to three different stakeholders, B threats of the RNCP according to the same three stakeholders.
## Appendix B: Workshop output and coding

*Table B.1: What youth values about nature in general. Coded answers generated the word cloud based on the weight of codes*

<table>
<thead>
<tr>
<th>Answer</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think about this summer in Sweden. I had a picnic with my boyfriend outside. We swam in the water in front of us. We kept sliding our blankets into the remaining patches of the sun as it set. I appreciated the quiet and the warmth.</td>
<td>picnic, sunbathing, calmness, movement, and company</td>
</tr>
<tr>
<td>I sat by the lake. I felt small in the bigger contest, yet a part of the whole. Made me realize that my anxiety at the moment was kind of released. Appreciated the movement of the clouds above me and the branches of the trees.</td>
<td>calmness</td>
</tr>
<tr>
<td>Calm environment, birds singing, loneliness, walking on soft ground, the sound of wind moving branches</td>
<td>sound of the wind, bird sounds, calmness</td>
</tr>
<tr>
<td>Space for running, cycling, feeling peace and dis-stress. In summer I value the sound of leaves. Appreciate the birds singing and swimming, and shade. I highly appreciate the air that freshens me after an intense workout. I enjoy identifying tree species on the way. Privacy.</td>
<td>sound of the wind, movement, the sound of birds, biodiversity</td>
</tr>
<tr>
<td>Beauty. Nature can be super beautiful. Late summer/ autumn when the colors of the meadows were super beautiful and the grass was long and moving in a soft wind. I was cycling through this landscape. I guess I often connect nature to movement.</td>
<td>movement, beauty, colors</td>
</tr>
<tr>
<td>I was up in a tower overlooking the world's largest mangrove forest, and I felt a moment of vulnerability and appreciation as it was so incredibly vast. The silence was absolute but the richness and intensity of the colors, animal sounds and even the crisp fresh air was overwhelming. I felt lucky to be able to witness this occasion of untouched nature. Even though I was not immersed in it I felt encapsulated.</td>
<td>calmness, colors biodiversity, Tree fresh air</td>
</tr>
<tr>
<td>Sound of wind in the leaves. The first birdsongs share the arrival of spring. A space to reflect and decelerate after a long day (walking/jogging). Visiting the pigs at the farm because they always raise my mood.</td>
<td>sound of the wind, sounds of birds, movement</td>
</tr>
<tr>
<td>The silence, its priceless</td>
<td>calmness</td>
</tr>
<tr>
<td>Nature makes me feel calm and hopeful. I like listening to the birds</td>
<td>calmness, the sound of birds</td>
</tr>
<tr>
<td>Nature reminds me that nothing is permanent (changing seasons, new life/death, etc.)</td>
<td>change</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Calm – possible to hear various noises, even very quiet ones. Discover many details. Natural light</td>
<td>calmness</td>
</tr>
<tr>
<td>Forest, variety of species, spring, snow melting, sun warming skin, green, bird songs, space, quiet, alive, soft, everchanging, part of whole</td>
<td>biodiversity, company, bird sounds, change</td>
</tr>
<tr>
<td>Sharing it with my friend</td>
<td>company</td>
</tr>
<tr>
<td>Walking to university from home is a time to go through a beautiful forest, take a walk to talk to friends, fresh air, beautiful landscape, feeling calm, feeling like a kid again, seeing animals such as deer, hare,…</td>
<td>company, fresh air, beauty, calmness, biodiversity</td>
</tr>
<tr>
<td>Biodiversity is incredibly important for me and visiting diverse and protected areas gives me a great appreciation and hope for what life on earth can accomplish. Observing lichens or a tree or cabs in a tidepool is to witness millions of years of evolution. In nature, life finds a way.</td>
<td>biodiversity</td>
</tr>
</tbody>
</table>
Figure B.1: NFF output of each group. Post-its with original answers and positions are presented.

Table B.2: Number of post-its in each area of the NFF triangle for the different groups. NfN = Nature for nature, NfS = Nature for society, NaC = Nature as culture

<table>
<thead>
<tr>
<th></th>
<th>NfN</th>
<th>NfS</th>
<th>Nfs/NaC</th>
<th>NaC</th>
<th>NaC/NfN</th>
<th>Middle</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature</td>
<td>12</td>
<td>8</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>Bergshamra gang</td>
<td>4</td>
<td>10</td>
<td>4</td>
<td>8</td>
<td>1</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Tree</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td></td>
<td>19</td>
</tr>
</tbody>
</table>
Table B.3: Characteristics youth appreciates about nature in the RNCP and where they mapped them in the NFF triangle. NfN = Nature for nature, NfS = nature for society, NaC = nature as culture. Overlapping spaces in the triangle are displayed as e.g. NfN/NfS.

<table>
<thead>
<tr>
<th>Group 1 “Nature”</th>
<th>Group 2 “Bergshamra gang”</th>
<th>Group 3 “Tree”</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NfN</strong></td>
<td><strong>NfN</strong></td>
<td><strong>NIN</strong></td>
</tr>
<tr>
<td><strong>NfS</strong></td>
<td><strong>NfS</strong></td>
<td><strong>NfS</strong></td>
</tr>
<tr>
<td><strong>NaC</strong></td>
<td><strong>NaC</strong></td>
<td><strong>NaC</strong></td>
</tr>
<tr>
<td><strong>NfN/ NfS</strong></td>
<td><strong>NfS/ NaC</strong></td>
<td><strong>NfS/ NaC</strong></td>
</tr>
<tr>
<td><strong>NfS/ NaC</strong></td>
<td><strong>NaC/ NfN</strong></td>
<td><strong>NaC/ NfN</strong></td>
</tr>
<tr>
<td><strong>NaC/ NfN</strong></td>
<td><strong>Calm, not many people</strong></td>
<td><strong>Biodiversity, animals</strong></td>
</tr>
<tr>
<td><strong>wild animals</strong></td>
<td><strong>forest animals (deer, squirrels, birds)</strong></td>
<td><strong>diverse habitats</strong></td>
</tr>
<tr>
<td><strong>life</strong></td>
<td><strong>beauty, flowers, grasses</strong></td>
<td><strong>protect what’s there</strong></td>
</tr>
<tr>
<td><strong>silence</strong></td>
<td><strong>large green space</strong></td>
<td><strong>unspoiled nature</strong></td>
</tr>
<tr>
<td><strong>insects</strong></td>
<td><strong>Slotts café</strong></td>
<td><strong>tree connection</strong></td>
</tr>
<tr>
<td><strong>fish ways</strong></td>
<td><strong>space for bonfires, parties</strong></td>
<td><strong>connectivity for animals &amp; plants to migrate among urban areas</strong></td>
</tr>
<tr>
<td><strong>birds singing</strong></td>
<td><strong>swimming</strong></td>
<td><strong>habitat for plants and animals</strong></td>
</tr>
<tr>
<td><strong>deer</strong></td>
<td><strong>safety</strong></td>
<td><strong>fresh air</strong></td>
</tr>
<tr>
<td><strong>our world</strong></td>
<td><strong>break from busy city life</strong></td>
<td><strong>CO2 sequestration</strong></td>
</tr>
<tr>
<td><strong>freedom</strong></td>
<td><strong>food growing</strong></td>
<td><strong>picnic in free space</strong></td>
</tr>
<tr>
<td><strong>old trees, water, sunshine</strong></td>
<td><strong>paths in forest for walking</strong></td>
<td><strong>recreational activities (biking, walking)</strong></td>
</tr>
<tr>
<td><strong>photosynthesis</strong></td>
<td><strong>Ulriksdal castle &amp; forest around it</strong></td>
<td><strong>Swimming in nature</strong></td>
</tr>
<tr>
<td><strong>balance of trophic levels</strong></td>
<td><strong>Tourism (museums, ferries, amusement park</strong></td>
<td><strong>space for you to practice something</strong></td>
</tr>
<tr>
<td><strong>nitrogen-, water-, carbon cycles</strong></td>
<td><strong>NIN</strong></td>
<td><strong>rewilding humans a change to city life</strong></td>
</tr>
<tr>
<td><strong>NIN/ NfS</strong></td>
<td><strong>lying on grass</strong></td>
<td><strong>calm and connection, nature without economic reason</strong></td>
</tr>
<tr>
<td><strong>NfS</strong></td>
<td><strong>reading a book</strong></td>
<td><strong>Euphoria</strong></td>
</tr>
<tr>
<td><strong>taking a break from the world</strong></td>
<td><strong>curiosity &amp; discovery</strong></td>
<td><strong>taking a break from the world</strong></td>
</tr>
<tr>
<td><strong>space to sunbath</strong></td>
<td><strong>picnic</strong></td>
<td><strong>grounding</strong></td>
</tr>
<tr>
<td><strong>space for movement</strong></td>
<td><strong>living close to the forest</strong></td>
<td><strong>everchanging</strong></td>
</tr>
<tr>
<td><strong>swimming</strong></td>
<td><strong>sense of place</strong></td>
<td><strong>something larger than ourselves</strong></td>
</tr>
<tr>
<td><strong>bird watching</strong></td>
<td><strong>free</strong></td>
<td><strong>connection to life</strong></td>
</tr>
<tr>
<td><strong>shadow</strong></td>
<td><strong>snowball fights</strong></td>
<td><strong>NaC/ NfN</strong></td>
</tr>
<tr>
<td><strong>NfS/ NaC</strong></td>
<td><strong>picking berries &amp; mushrooms</strong></td>
<td><strong>Hobbies/species identification</strong></td>
</tr>
<tr>
<td><strong>History, walking in footsteps</strong></td>
<td><strong>watching forest change with the season</strong></td>
<td><strong>NaC/ NfN</strong></td>
</tr>
<tr>
<td><strong>wonder</strong></td>
<td><strong>feeling peaceful &amp; calm</strong></td>
<td><strong>Calm, not many people</strong></td>
</tr>
<tr>
<td><strong>grounding</strong></td>
<td><strong>feeling connected to earth</strong></td>
<td><strong>NaC/ NfN</strong></td>
</tr>
<tr>
<td><strong>everchanging</strong></td>
<td><strong>A reminder that nothing is permanent</strong></td>
<td><strong>NaC/ NfN</strong></td>
</tr>
<tr>
<td><strong>something larger than ourselves</strong></td>
<td><strong>NaC/ NfN</strong></td>
<td><strong>Calm, not many people</strong></td>
</tr>
<tr>
<td><strong>connection to life</strong></td>
<td><strong>NaC/ NfN</strong></td>
<td><strong>NaC/ NfN</strong></td>
</tr>
</tbody>
</table>
Table B.4: Coding of visioning exercise. Columns show characteristics the three different groups wrote captured on post-its.

<table>
<thead>
<tr>
<th>Code</th>
<th>Group 1 &quot;Nature&quot;</th>
<th>Group 2 &quot;Bergshamra Gang&quot;</th>
<th>Group 3 &quot;Tree&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Regulation</td>
<td>protect breeding/ feeding grounds</td>
<td>include species' perspectives</td>
</tr>
<tr>
<td></td>
<td>keystone species</td>
<td>more birdhouses on trees</td>
<td></td>
</tr>
<tr>
<td></td>
<td>old growth</td>
<td>more tree planting</td>
<td>botanical garden</td>
</tr>
<tr>
<td></td>
<td>allemansrätten</td>
<td></td>
<td>citizen assembly to decide about future of park</td>
</tr>
<tr>
<td></td>
<td>education in park</td>
<td>community gardens &amp; local food production</td>
<td>education centres</td>
</tr>
<tr>
<td>H 3</td>
<td>create awareness about existence of the park</td>
<td>more transparency regarding work done in park</td>
<td>maps and signs</td>
</tr>
<tr>
<td></td>
<td>activities within the park on municipal, organizational &amp; private level</td>
<td>initiatives like Rosendals Trädgården</td>
<td>Activities</td>
</tr>
<tr>
<td></td>
<td>living spaces within park boarders</td>
<td></td>
<td>Divers living spaces</td>
</tr>
<tr>
<td></td>
<td>diversity between, activities, ecosystems &amp; locations</td>
<td></td>
<td>Swimming access</td>
</tr>
<tr>
<td></td>
<td>access to areas where you can swim</td>
<td></td>
<td>Waste sorting</td>
</tr>
<tr>
<td></td>
<td>waste sorting</td>
<td></td>
<td>Bike sharing</td>
</tr>
<tr>
<td></td>
<td>growding</td>
<td>lots of parking spaces</td>
<td>surface sealing</td>
</tr>
<tr>
<td>H 1</td>
<td>driver: pressure for new buildings</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>landscape fragmentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>proximity to motorways and traffic</td>
<td>noise pollution</td>
<td>pollution (atmospheric, noise, light, garbage)</td>
</tr>
<tr>
<td></td>
<td>Deprioritizing neglecting nature</td>
<td>business money oriented</td>
<td>economic interest</td>
</tr>
</tbody>
</table>
|      | activities in park as an upper class pursuit | privatized land | political context, living space inaccessible | 0
<table>
<thead>
<tr>
<th><strong>H3 Future</strong></th>
<th><strong>Recreational amenities</strong></th>
<th><strong>Nature education</strong></th>
<th><strong>Society involvement</strong></th>
<th><strong>Gardening initiatives</strong></th>
<th><strong>Expansion</strong></th>
<th><strong>Law</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>limited awareness of park size, biodiversity and activities</td>
<td>more benches/picnic areas, ladders to go swimming</td>
<td>more animals/ more plants</td>
<td>limited awareness</td>
<td>More species/ biodiversity</td>
<td>Nature preservation</td>
<td></td>
</tr>
<tr>
<td>high biodiversity &amp; keystone fauna</td>
<td>diverse habitats, large areas only for nature space for nature itself</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bee farm</td>
<td>More plants, less buildings, some infrastructure like cafes or bike roads</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>make it larger, connect with more parks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>natural growth</td>
<td>increase public space (make royal buildings public)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>integration of park policy protection in broader city policy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>community gardens</td>
<td>community involvement/ gardening</td>
<td>botanical gardens, gardens</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>educational signs about species</td>
<td>information explaining value of nature for functioning future</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>increased understanding of park, its environment &amp; resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>activities organized by park to observe and educate about ecosystems</td>
<td>involve society in the park</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gatherings in nature to connect/reflect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>availability of opportunities to “exist” in natural space (boat renting/ campgrounds)</td>
<td>lawns to lie/ sit down</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>accessibility</td>
<td>accessibility: public transport rather than individual transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>accessible for everyone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no car zones no building/ construction zones no highways</td>
<td>less cars</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bridge/ tunnel between Haga park &amp; botanical</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| <strong>Law</strong> | unequal care/funding for different areas of park | revisit law, law is ambiguous | | | |
| | | Short term planning lack of mobilization | | | |</p>
<table>
<thead>
<tr>
<th>Strong protection/regulation</th>
<th>care/ecosystem for all living in nature</th>
<th>no future constructions, nature takes over</th>
<th>Priority Nature</th>
</tr>
</thead>
<tbody>
<tr>
<td>waste free</td>
<td>no/ less pollution</td>
<td>more sensor lights on main paths</td>
<td>Reduced pollution</td>
</tr>
</tbody>
</table>
Table B.5: Number of post-it’s placed on the 3H framework by each group

<table>
<thead>
<tr>
<th></th>
<th>Nature</th>
<th>Bergshamra Gang</th>
<th>Tree</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1-Present</td>
<td>10</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>H3-Present</td>
<td>11</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>H3-Future</td>
<td>14</td>
<td>5</td>
<td>16</td>
</tr>
</tbody>
</table>

Table B.6: Newspaper headlines and social media posts created by the three different groups

<table>
<thead>
<tr>
<th>Group “Nature”</th>
<th>Group “Bergshamra gang”</th>
<th>Group “Tree”</th>
</tr>
</thead>
<tbody>
<tr>
<td>- check out the new interactive map of the #RNCP featuring all its swimming spots on @ParkApp!</td>
<td>- Animal thought to be extinct – spotted in the RNCP!</td>
<td>- Interspecies court rules light pollution to limit - Everyone needs to use night vision goggles</td>
</tr>
<tr>
<td>- FREE LUNCH! #RNCP @CommunityGarden</td>
<td>- Stockholm launches the largest urban car-free zone!</td>
<td>- Calling young people: too many gardens to care for!</td>
</tr>
<tr>
<td>- Come to the harvest festival in the national city park this September</td>
<td>- Stockholm becomes top producer of food for self-consumption</td>
<td>- Royal National City Park turns Public – Now called People’s Park</td>
</tr>
<tr>
<td>- Royal National City Park wins Ell’s most beautiful park for the third year in a row – judges praise biodiversity</td>
<td>- RNCP breaks a clean air record!</td>
<td>- Extending car ban from People Oak Park to all of Stockholm</td>
</tr>
<tr>
<td>- Walk over 50 km within nature from the National City Park through corridors and connections to other parks in Stockholm</td>
<td>- Skansen animals freed at last!</td>
<td>- Endangered species return to the Royal National City Park in Stockholm</td>
</tr>
<tr>
<td>- It’s Bee-autiful! RNCP Bee farm celebrates grand opening</td>
<td>- New National Holiday alert: the king hands out homegrown fika to all who walk or bike 3 km in RNCP</td>
<td>- Ulriksdal slott turned into a co-living for refugees, seniors, and students</td>
</tr>
<tr>
<td></td>
<td>- Get your towel and come to your closest community sauna, every Tuesday 8-11. Free tea!</td>
<td>- All of Stockholm is now a park</td>
</tr>
</tbody>
</table>
Appendix C: Participant demographics and reflection

Figure C.1: Participant demographics. Stacked charts show shares of all 15 participants by age, gender, nationality, and the duration they have been living in Stockholm until the workshop in years.
Table C.1: Backgrounds and expertise of participants (n=15). Multiple answers were possible.

<table>
<thead>
<tr>
<th>Broad expertise</th>
<th>number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>2</td>
</tr>
<tr>
<td>Marine Biology</td>
<td>3</td>
</tr>
<tr>
<td>Environmental sciences</td>
<td>3</td>
</tr>
<tr>
<td>Illustration and art</td>
<td>1</td>
</tr>
<tr>
<td>Social science</td>
<td>2</td>
</tr>
<tr>
<td>Geography</td>
<td>3</td>
</tr>
<tr>
<td>Sustainability sciences</td>
<td>3</td>
</tr>
<tr>
<td>Political sciences</td>
<td>2</td>
</tr>
<tr>
<td>Landscape ecology</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure C.2: Participants' feedback on the workshop. Each participant left a cross in the diagram after the workshop.
Table C.2: Open-ended questions with answers from the reflection survey (n=14).

<table>
<thead>
<tr>
<th>Please provide specific feedback for different workshop parts, if you have some (e.g. What did you find easy? What did you struggle with?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- I understood everything but the first task with the triangle I had problems understanding because the answers of my group were all so different that I wasn’t sure if I did the right thing.</td>
</tr>
<tr>
<td>- The toughest part was with nature's future exercise. As our group was thinking about ecosystem services as a man made idea and therefore trouble differentiating it from other categories.</td>
</tr>
<tr>
<td>- I liked working with the post it's and writing my ideas down</td>
</tr>
<tr>
<td>- I felt very comfortable with participating but sometimes it felt hard to come up with an idea out of the air. But I thought our group size was really excellent for generating ideas</td>
</tr>
<tr>
<td>- I liked the variation in answering questions. Either out loud, on post it notes, in a group setting.</td>
</tr>
<tr>
<td>- Easy: discussion within every part</td>
</tr>
<tr>
<td>- I enjoyed the activists to get to know everyone better, but also the facilitators made understand of the tasks easier</td>
</tr>
<tr>
<td>- Easy to follow and very well-structured workshop.</td>
</tr>
<tr>
<td>- I found the definition of &quot;Nature for Nature&quot; and &quot;Nature for Culture&quot; in the Natures Futures Framework not super clear. It might have been good to make this a bit clearer before the workshops started.</td>
</tr>
<tr>
<td>- I think it was a very good idea to make us stand up and position ourselves according to what we think!</td>
</tr>
<tr>
<td>- Thinking about what I value in nature was quite interesting and made my thoughts wonder.</td>
</tr>
<tr>
<td>- It was especially difficult to think about nature for culture values or nature for nature values in the park. As the park is human made it feels like everything is made for humans to use, enjoy and experience. Is it possible to value nature for nature or do we then again value it for ourselves?</td>
</tr>
<tr>
<td>- It was hard to differentiate where concepts or experiences belonged on the pyramid with nature for nature, nature for society, and nature as culture</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What do you see as the most important benefits of being a participant in a workshop where youth meet to discuss the future of Royal National City Park?</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Contribute to a positive future</td>
</tr>
<tr>
<td>- I now want to get out to the park more and think about new ideas and understand more about the park and what rules and projects are happening now.</td>
</tr>
<tr>
<td>- I didn't even know the park was so big before participating in the workshop so I liked communicating and talking to people about it</td>
</tr>
<tr>
<td>- I just wanted to hear what others thought and have them help me engage with my own ideas.</td>
</tr>
<tr>
<td>- Meeting other people in my sphere. Learning about the boundaries of the RNCP, which were unclear prior. Thinking about the parts of the park I have yet to utilize and also pause to appreciate all the aspects of the park that I have used.</td>
</tr>
<tr>
<td>- Sharing views and ideas. Perhaps a call for action</td>
</tr>
<tr>
<td>- Hopefully influencing future policy and building a shared vision</td>
</tr>
<tr>
<td>- The possibility of networking and thinking positively about the future</td>
</tr>
<tr>
<td>- My personal benefits are that I had fun, I got to know new people, I got to know some frameworks better, I got to know new scientific methods. If the results from the workshops are used to design the future of the park I can also benefit as a visitor of the park.</td>
</tr>
<tr>
<td>- Firstly it was really nice to meet everyone :) but mainly it was great to exchange our different points of view and ideas.</td>
</tr>
<tr>
<td>- It was interesting to see what other youths' thoughts and interests are in the need for a public park</td>
</tr>
<tr>
<td>- The benefit for me was to think about this park that I use and walk through every day and actually valued it even more after the workshop because I thought about all the things the park already provides. Otherwise, I hope that some feedback can be taken into account when thinking about the future of that park.</td>
</tr>
</tbody>
</table>
- To hear about other people's ideas and perspectives, gaining a broader picture of the park's meaning to people.
- That youths' voices get heard

**What are the most important challenges with participating in these kinds of workshops?**

- Taking time for sth that's important
- The challenge is not getting caught up in wording rather than thinking freely about ideas.
- Usually differences between participants but now because of similar backgrounds it was easier and better
- I think for most people it is finding the time since they need to be sort of extended to get to your unique ideas
- Coming up with visions that include a variety of ideas. Some ideas may conflict slightly.
- Communicating your thoughts understandable
- Creating an environment in which everyone has room to share their views
- being able to express ideas/concepts with people from outside my area / with people of distinct ages of mine
- Three hours was quite a lot of time, so time constraints are a big reason for not participating in such workshops. Another challenge is that often you don't know if the results from such workshops are really considered and implemented in real life. If they are not implemented there is a danger that you might feel like you wasted your time.
- I think for me it was that I thought I didn't know enough about the park so I was afraid I won't have good input compared to the others but in the end I really felt that we could discuss everything and find together some good ideas!
- Challenging was sometimes to focus on the task and not discussing so much around it
- I feel representative. I think it is really difficult to get a representative sample of youth. Different ages from 18-25, who are the people who have time and are interested in participating in such a workshop? I also felt that a lot of people participating were actually not from Stockholm and did not really have a strong connection with that park. I am also not sure if it is possible to capture everything with these frameworks, although I think the discussions were rich and everyone thought quite deeply about their values to nature and especially that park.
- Staying focused on the task instead of drifting into discussions about less central aspects.
- Keeping my focus. Got quite tired at the end, but am not sure what could have been done differently. I did enjoy how you managed it, with breaks, changes of activities, some movements, etc.

**What is your relation with the Royal National City Park? (e.g. I live in the Park, I use it for recreation, never go there,...)**

- I live in the park
- I love to walk around and take a second to decompress. I also swim and sit to read during the summer.
- My campus is there
- I use it for recreation and relaxation
- I go to school in the park and commute through different parts of it.
- I live in it and visit it as much as I can
- I live there, go to university there and use it for recreation
- I use it every day, live on it
- I use it for recreation.
- I am going there to run or just to take a walk
- I live in the park and use it for recreation.
- I live in the park and use it for recreation.
- I live and study in the Park and often take walks in it.
- Didn't know it was a park but have been there quite a lot in my life
Appendix D: Glossary of terms

**Pathways** - describe diverse routes that can be taken to reach an aspired future outcome or desired goals. They are intentional sequences of steps or actions, each contributing to the overall progress toward the desired outcome and the achievement of transformative change (Wise et al., 2014). The 3H framework is frequently applied in future visioning to generate pathways that connect the current state with the desired future (Sharpe et al., 2016).

**Scenarios** - describe possible future situations based on different assumptions about crucial factors and connections. They are valuable tools for decision-making and planning in uncertain times (Millenium Ecosystem Assessment, 2005).

**Social-ecological system** - refers to how the natural environment and people interact and influence each other. An ecological system is an interdependent system of organisms and biological units. The social part describes the tendency to collaborate and rely on others of the same kind (Anderies et al., 2004).

**Sustainability** - “A characteristic or state whereby the needs of the present and local population can be met without compromising the ability of future generations or populations in other locations to meet their needs” (Millenium Ecosystem Assessment, 2005).

**Transformative change** - is “a fundamental, system-wide reorganization across technological, economic, and social factors, including paradigms, goals, and values” (IPBES, 2019)

**Values** - have diverse meanings depending on their scientific contexts. According to IPBES (2015), a value can be a ”principle or core belief”, a “preference” or the “importance of something”. This study focuses on values that people associate with nature (intrinsic, instrumental, and relational values).

**Vision** - is used in this study to refer to a desirable future state. As a possible future state, a vision can be seen as a subgroup of scenarios (Wiek & Iwaniec, 2014).
Appendix E: Preparing information participants received before workshop

Participatory Workshop 17.02.2023

Exploring youths’ nature values and desirable future visions of the Royal National City Park in Stockholm

Information about the participatory workshop on Exploring youths’ nature values and desirable future visions of the Royal National City Park in Stockholm

The following document contains information about the workshop you will be attending. It is important that you take the time to read this document as it will provide you with important details about the workshop.

Reading this document and familiarizing yourself with the following information will help ensure that you get the most out of the workshop and are able to fully participate.

What the study is about

Human survival and well-being are highly dependent on healthy ecosystems and the services they provide as well as high biodiversity rates. In our current epoch, the Anthropocene, which is primarily dominated by human actions, our ecosystem faces increasing challenges like climate change, rising extinction rates, and decoupling between humans and nature. There is an urgent call for a transformation towards more sustainable and resilient futures and to stop and reverse biodiversity loss. Positive future visions in which humans and nature prosper together can inspire us to think creatively about potential positive futures and accelerate actions and decisions that we need to take now to enable sustainable transformations.

As green infrastructure in an urban area, the Royal National City Park in Stockholm provides health advantages by providing ecological qualities which can improve ecological connectivity. Therefore, the SRNCP delivers an interesting study object to investigate the plurality of values it provides.

In this study, you will take part in a participatory workshop to provide what you value about nature and your positive future visions of the Stockholm Royal National City Park to

1. investigate multiple values the nature of the park has for youth and to create more inclusive and representative scenarios and models which can improve future assessments.
2. Capture the plurality of desirable future visions the park has for youth
3. inspire and motivate stakeholders and local decision-makers to follow up with actions to achieve a sustainable transformation toward those visions.

Why have you been invited to take part?

I am inviting you to join this participatory workshop because I believe that your perspectives, experiences, and ideas will help to create a unique desirable future vision for the Royal National City Park. Your insights can shape the park’s future by informing and inspiring local decision-makers and accelerating actions toward more sustainable futures. Focusing on youth when studying future visions is important because young people are the future of our society. You are the ones who will be making decisions, leading initiatives, and driving progress.

Workshop Schedule
The workshop takes place on **Friday 17.02.23** at 1 pm (please try to arrive at 12:45) at the Stockholm Resilience Centre in room *Holling* and is divided into four parts:

1. Introduction & setting the scene
2. Grouping exercise
   
   *FIKA BREAK*

3. Visioning exercise
4. Group presentation of results
   
   *MINGLE*

**Post-workshop survey**

The week after the workshop you will receive an online survey to your mail address with a few questions about the workshop for you to reflect on. This won’t take longer than 15 minutes and you have a week to fill out the questionnaire (However, I recommend doing it as soon as possible to use your fresh memories).

**Find your way**

The workshop takes place at Stockholm Resilience Center (Albanovägen 28, 106 91 Stockholm). Take the subway or bus to Odenplan, Tekniska Högskolan, or Universitetet and get off at bus stop Albano.

- From Odenplan: Bus 50 towards Stora Lappkärrsberget
- From Tekniska Högskolan: Bus 676 towards Norrtälje or Bus 670 towards Vaxholm
- From Universitetet: Bus 50 towards Hornsberg or 676, 670 towards Tekniska högskolan. If you prefer a walk it takes 10 minutes along Roslagsvägen towards the city

From the bus stop Albano, you walk to House 1 and find your way to floor 4. Once you have arrived you can either send me a mail, message, or call (+491788901246) and wait at the glass door for me to pick you up.

**Confidentiality:** Your responses during the workshop will remain entirely anonymous. The results will be generated as group output and will not include your name or your organization’s name but only your group’s name. There might be pictures taken during the workshop which can be published in my master’s thesis. Before the workshop, you will be asked to sign a consent form that you received this information
and consent to take part in the workshop. During group work, each group has a group facilitator that keeps track of your process, takes notes, and is there for you if you have questions.

**Participation is voluntary**

Participation in the workshop does not include any economic remuneration and your participation in this research project is completely voluntary. You can withdraw your consent of participation at any time and leave the workshop whenever you want without providing a justification. There is nothing you can do wrong and there will be a safe space for you to share your thoughts and opinions.

**Confirm participation:** In order to make planning easier for me, I kindly ask you to confirm your participation by the latest **Friday 10th of February**.

**How to learn about the results**

If you are interested in the results of the workshop I can send you a copy of the finished master thesis via mail.

If you have any questions regarding your participation, or data processing, or the workshop in general, you can contact me using the following information.

**Hannah Thiel**
Masters Student at the Stockholm Resilience Center (SRC)
**Email:** hannah.thiel285@gmail.com
**Phone:** +49 1788901246

**Jan Kuiper**
Researcher at SRC and Supervisor of this project.
**Email:** jan.kuiper@su.se

Looking forward to seeing you soon!
Sincerely,

Hannah
Appendix F: Consent form

Consent form for participants

Student: Hannah Thiel, Hannah.thiel285@gmail.com
Supervisors: Jan Kuiper, jan.kuiper@su.se
Institution: Stockholm University and Stockholm Resilience Center

Consent to participate in the project
I have received written information about the study and have had the opportunity to ask questions.

● I agree to participate in the project Exploring Youth’s desirable future visions of the Royal National City Park in Stockholm

● I agree that my answers and results will be processed as described in the information about the study which I received

● I agree to answer in the online post-workshop survey, which I will receive via mail the week after the workshop

Name
Age

Gender  ) female  ) male  ) non-binary  ) rather not say

Nationality
Living in Stockholm since (rough indication, e.g. 2 years)

Broad expertise (e.g environmental sciences, marine sciences, biology, ...)

Organization/group OPTIONAL (e.g. FFF, Symbios, Fältbiologerna, Jordens vänner, ...)

Place and date  Signature
Stockholm, 17.02.2023
Appendix G: Impressions from the workshop