UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Integrated Valuation of UBC's Biodiversity and Ecosystem Services

Adam Hicks

University of British Columbia

RES 505

Themes: Biodiversity, Land, Wellbeing

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INTEGRATED VALUATION OF UBC'S BIODIVERSITY AND ECOSYSTEM SERVICES

In Collaboration with SEEDS (Social Ecological Economic Development Studies) Sustainability Program and Campus and Community Planning

By RES 505 student Adam Hicks, Supervised by Dr Leila Harris and assisted by Campus and Community Planning team members Emma Luker and David Gill

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1.0 Executive Summary

This research project was about the valuation of biodiversity and ecosystem services from the perspective of select University of British Columbia staff. The idea was based around understanding the values that key UBC staff hold for biodiversity and ecosystem services in their professional and personal lives.

The background of this project was mainly based off Chan et al. (2016), in which the paper explores how "relational values" (a sense of place or wellbeing within nature) are needed to protect and preserve ecosystem services; rather than ones around humankind (instrumental values) or values for its own sake (intrinsic values).

This work was created to include a more qualitative look into UBC's biodiversity and Ecosystem Services, which has previously been dominated by quantitative approaches. These previous projects include mapping biodiversity on campus, tree inventory work, green corridors, and carbon Sequestration valuations (Dyck, 2016, Ghiam, 2018, Madden, 2017). The studies found that eleven

types of habitats are present at UBC as well as their locations, what food sources and species are in totem park. The studies also showed the tree inventories of the 534 trees around the stadium area zone, and the average amount of carbon sequestration occurring via the western red cedar *Thuja plicata*. From these studies, a much clearer picture of what biodiversity and ecosystem services are present at UBC is now known, and a greater understanding of qualitative themes around biodiversity and ecosystem services is required.

Therefore, the key concept of this project is to explore how staff relate professionally (firstly) and personally (secondly) to themes around biodiversity and ecosystem services at UBC. In order to try to make suggestions for improvements such as those around a future UBC biodiversity framework.

The critical objectives from my research included trying to understand the value that UBC's staff have for biodiversity, and how they could contribute to a possible UBC biodiversity framework moving forward. With key questions including:

- Do Staff value and use these themes personally and professionally?
- Have these themes been introduced to the selected departments more over time, and if so, how?
- And did staff have suggestions for how improvements around these themes could be made at UBC?

My methodological approach involved using Semi-Structured Interviews and a secondary method in which respondents would pick three wishes for how their department/or how these themes of biodiversity could be improved. Semi-Structured interviews are interviews for which there are no rigorous sets of questions; instead, questions are asked informally with open responses. Semi-Structured Interviews allow the respondent to bring up differing ideas openly and casually as long as it fits in with the framework of themes discussed. Semi-Structured interviews are well used and respected in qualitative research, with notable benefits gained from using them (Harrell and Bradley, 2009). All interviews were conducted via zoom software due to the Covid-19 Pandemic, and due to

the considerable time constraints only five respondents were interviewed. This therefore reduces the validity of my study as ideally; I would have had a deeper sample of UBC staff respondents.

My interview questions were prioritized to get essential information on UBC's ecosystem services and how a possible biodiversity framework should be shaped, followed by supplemental but useful data. Questions were all tailored to the individual respondents, but general questions are shown below and included their personal and professional standpoints. Some questions were asked to get a general sense of role, department, or their work environment before moving on to more relevant questions.

Interviews were then coded and analyzed using strategies taken from (Leavy and Saldaña, 2014). And using Microsoft Excel and word. I attempted to use the In Vivo coding technique in which codes are based on the language that is spoken in the interview (Leavy and Saldaña, 2014). I felt this strategy would work well for me as all my different respondents would naturally lead my themes towards their professional areas of interest. Therefore, the words would be quite respondent chosen. These strategies were used to identify key themes of how biodiversity/ecosystem services or green spaces were valued in these departments, both personally and professionally. And to see how different departments could improve going forward and what suggestions for improvements respondents might have about a framework. Questions asked included:

- Can you explain your role here at UBC?
- How long have you worked here?
- What does your department focus on here?
- How has your role/department changed over time?
- Do you think your department uses themes or Biodiversity/Ecosystem Services or Green Spaces in your work? If so, how? If not, can you explain that for me?

- Have you seen any other universities/ places etc. where you think they are performing better/ delivering more than UBC?
- Personally, how do you feel about the importance of these themes?
- Any final points you would like to add?

Five Respondents were selected from Human Resources, Communications, Museum Curatorial Staff, Student Recruitment, and Wellbeing. Respondents were chosen and accessed through using the SEEDS team members Emma Luker and David Gill's contacts. I then used these contacts and then proceeded to use Snowball sampling in which we invite respondents to suggest other potential respondents. These departments were chosen due to their use of the value of ecosystem services and biodiversity in a completely different way, and their values will enable UBC's framework also to include commercial values of ecosystem services and biodiversity as well as biological, cultural, and social values. Personally, themes were also looked at, as personal drivers of why respondents valued and used these themes in their professional lives could also be interlinked.

Key Results from respondents were that 4/5 of respondents used these themes in their working lives, and 5/5 believe these themes were essential and used in their professional lives due to wellbeing and social needs. Other results from the interviews included:

- 3/5 respondents noted that their departments had increased and 2/5 indicated that their departments had decreased or stayed the same in size;
- All Respondents felt that UBC's campus was intrinsically beautiful and unique;
- And 3/5 Respondents hoped that UBC would directly increase its valuation of these themes around campus.

Overall the results highlighted the importance of these themes both professionally and personally in respondents' lives. But also, how all respondents viewed UBC as intrinsically unique and challenging

to compare with other Universities. However, the work also highlighted the need for improvements from UBC in various departments.

Other themes presented by respondents related well to Chan et al. (2016) workaround relational values biodiversity and ecosystem services. From these discussions, I believe that one approach would be to use a framework from the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) as a basis for UBC's biodiversity framework. This framework (which will be outlined in more detail below) was developed in the wake of the Millennium Ecosystem Assessment. The framework has several different elements to it but focuses on the links between nature and people. The key elements include: "nature; nature's benefits to people; anthropogenic assets; institutions and governance systems and other indirect drivers of change; direct drivers of change; and good quality of life" (Díaz et al., 2015). This framework also speaks about the importance of valuations of nature/biodiversity/ecosystem services and how they can be incorporated into the framework.

This approach could be implemented as a UBC policy that also incorporates natural wellbeing, biological, and cultural diversity, that link in with the already ongoing at UBC. This approach should also include direct actions that increase stewardship, care, relational values, and diversity on campus.

From the themes developed from my interviews, key recommendations are shown:

- To try and look at incorporating a framework such as the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) ;
- To try and create and plan more purposed spaces around UBC campus including those directly for Cultural diversity;
- To also design and deliver increased biological Habitat heterogeneity around UBC wherever possible;

- For UBC to Continue to support themes of biodiversity and Ecosystem Services including around relational values, wellbeing, care, and stewardship;
- And also, to deliver more significant support and inclusion for staff around these themes and to use them as biodiversity Champions of UBC;
- To try and continue to improve interconnected valuations and thinking about the themes by improving connectivity and communication channels.

2.0 Personal context

I chose this topic due to my connection to biodiversity and the themes that surround it. All my varied lived experiences have allowed me to relationally value these themes around biodiversity and understand its importance for many different purposes. This valuation is what inspires me to make a change and shapes me personally and professionally in my life. Despite this, I have never focused on other people's valuations and uses of biodiversity in qualitative ways. Therefore, this project struck me as a great way to explore these themes while developing different skills and still trying to influence change around my UBC community directly.

3.0 Introduction in Context

Historically when we define biodiversity, it is thought of as "the variety of life in the world or in a particular habitat or ecosystem" (Lexcico, 2020). And ecosystem services are defined as "the many and varied benefits to humans gifted by the natural environment and from healthy ecosystems "(Millennium Ecosystem Assessment, 2005). However, in this project, we need to think of these terms differently, as I relate these very quantitative words and worlds to view the principles in a qualitative light and relate them to themes around valuations of biodiversity/ecosystem services/nature/green Spaces.

4.0 Introduction

In 2005 the Millennium ecosystem assessment was lunched and highlighted the key challenges ahead and threats to ecosystems around the world. This work laid a foundation for the understanding of ecosystem services functions and roles. These functions included: Provisioning (i.e., food and water); Regulating (i.e., flood and disease control); Cultural (i.e., spiritual, recreational, and cultural benefits); and Supporting (i.e., nutrient cycling, maintaining conditions for life (Millennium Ecosystem Assessment, 2005). The MEA led to a critical dialogue about how to value Ecosystem Services and biodiversity and how frameworks should look moving forward.

Quantifying biodiversity and Ecosystem services has typically been done through economic and biological means. Historically economic analysis has come from cost-benefit analysis (CBA) in which is a systematic approach that looks at the benefits and weaknesses of a chosen action (Hanley et al., 2009). A recent paper by Strand et al. (2018) estimated the value of the Amazon rainforest annually at $8.2 billion a year, including current sustainable use and, of course, global ecosystem services. This paper shows that CBA could be used to assist in understanding the costs and benefits of a policy but also showing the economic importance of ecosystems economically. However, a recent article argued that just as the United Kingdom's government is toying with the idea of natural capital value, that this process rather than adding a weapon in the environmentalist's arsenal creates a black and white picture for economists. Some argue this leads to the intrinsic, social, and cultural values being disregarded (Monbiot, 2018). This economic analysis is one element surrounding the importance of these themes; however, social understanding of these themes is also incredibly important.

Other social benefits of these themes includes improvements in physical and mental health in subjects who had spent more time in nature or natural environments (Bratman et al., 2012, Lachowycz and Jones, 2013). Bratman et al. (2012) shows from his review paper that some cognitive and mental health benefits are gathered from these themes, including increases in measures of memory, attention, and mood. Other benefits include that time in natural environments is shown to

improve emotional states, and to create better energy levels and harness tranquility (Bowler et al., 2010). And increase social cohesion in communities due to the increased likelihood of areas for group activities (Maas et al., 2009).

Recent work in understanding and valuing biodiversity and ecosystem services has involved understanding the values people hold for biodiversity and ecosystem services. This work is directed around how "relational values" (a sense of place or wellbeing within nature) rather than ones around humankind (instrumental values) or for nature's (intrinsic values) are needed to protect and preserve ecosystem services (Chan et al., 2016). Without these relational values and the attached social values and buy-in for the conservation of biodiversity or ecosystem services, biological objectives will likely be lost (Giakoumi et al., 2018, Christie, 2004). It has also been theorized that many valuations of nature can also become cultural pathways to an area leading to a reduced amount of wellbeing when a piece of biodiversity/nature/green space is lost or removed (Clark et al., 2014).

In Canada, these relational values have been apparent in indigenous groups for thousands of years but have not always been recognized by settlers. Key examples of long-standing indigenous approaches around spirituality, nature and clear intrinsic values are shown from literature and beliefs, including approaches from Tsawalk, Sumak kawsay (Gadgil et al., 1993, Chan et al., 2016).

Examples of the relationships include those with mother earth or Gaia. Although these values are not solely found in indigenous groups in Canada, these groups are historically the foundation in which these values were brought forward in Canada and British Columbia (Turner et al., 2000).

In British Columbia and at the University of British Columbia (UBC) previous work of valuations of biodiversity and ecosystem services have focused on quantitative approaches and valuations of biodiversity and ecosystem services including mapping biodiversity on campus, tree inventory work, green corridors, and carbon Sequestration valuations (Dyck, 2016, Ghiam, 2018, Madden, 2017). The studies found that eleven types of habitats are present at UBC as well as their locations, what food

sources and species are in totem park. The studies also showed the tree inventories of the 534 trees around the stadium area zone, and the average amount of carbon sequestration occurring via the western red cedar *Thuja plicata*. From these studies, a much clearer picture of what biodiversity and ecosystem services are present at UBC is now known, and a greater understanding of qualitative themes around biodiversity and ecosystem services is required.

Recently the University of British Columbia has started working through SEEDS (Social Ecological Economic Development Studies) Sustainability Program and Campus and Community planning to gauge a more qualitative look into valuations of Ecosystem Services and Biodiversity. Therefore, my project will contribute to a three-part project to look at biodiversity and ecosystem services valuations from academic staff, background staff, and students through SEEDS and Campus and Community planning. My project will focus on the professional and personal values of key personnel at the University of British Columbia and the use of these values from different perspectives. The overarching goal of the project is to use this information to inform a biodiversity and Ecosystem services framework and to possibly highlight consenting champions of biodiversity and ecosystem services from different UBC departments. This work should complement UBC's previous quantitative research and hopefully deliver a policy-based framework that can be successful at UBC, and deliver increased ecological and social wellbeing which is so vital (Atkinson et al., 2012).

5.0 Objectives

To understand the value that UBC's staff, including respondents from Human Resources, Communications, Curatorial Staff, Student Recruitment and Wellbeing, have for Green spaces/ Biodiversity and Ecosystem services in their professional and personal lives. And how this knowledge can be helpful to improve and develop UBC's angle for these themes. The critical objectives from my research included trying to understand the value that UBC's staff have for biodiversity and how they could contribute to a possible UBC biodiversity framework.

6.0 Methods

My methods involved using Semi-Structured Interviews and a secondary method in which respondents would pick three wishes for how their department/or these themes of biodiversity could be improved. Semi-Structured interviews are interviews for which there are no rigorous sets of questions; instead, questions are asked informally with open responses. Semi-Structured Interviews allow the respondent to bring up differing ideas openly and casually as long as it fits in with the framework of themes discussed. Semi-Structured interviews are well used and respected in qualitative research, with notable benefits gained from using them (Harrell and Bradley, 2009). All interviews were conducted via zoom software due to the Covid-19 Pandemic, and due to the considerable time constraints only five respondents were interviewed. This therefore reduces the validity of my study as ideally; I would have had a deeper sample of UBC staff respondents.

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- Have you seen any other universities/ places etc. where you think they are performing better/ delivering more than UBC?
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- Any final points you would like to add?

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These departments were chosen due to their use of the value of Ecosystem Services and Biodiversity in a completely different way, and their values will enable UBC's framework also to include commercial values of ecosystem services and biodiversity as well as biological, cultural and social values.

7.0 Results

A Semi-Structured Interview table of key staff respondents from The University of British Columbia is shown in Table 1 below. The information includes Dates, Times, Type of interviews, Setting, respondent, Topics covered, and the Keywords resulting from the interviews.

Table 1: Semi-Structured Interview table of key staff respondents from The University of British Columbia.

Date and Time	Type of Interview	Setting of interview	Who was present?	Main topics covered in interview	Keywords
1. March 17th, 2020 2:00 – 3:00pm	**Semi-Structured**	**Over zoom**	**Respondent 001 and I**	**Their Role at UBC; How it is changed over time; Value of Green Spaces.**	**Visual, UBC, Campus, Green Spaces.**
2. March 17th, 2020 3:00 – 4:00pm	**Semi-Structured**	**Over zoom**	**Respondent 002 and I**	**Their Role at UBC; How it is changed over time; Their Value of Green Spaces**	**Statistics, Wellbeing, UBC.**
3. March 23rd, 2020 11.30 -12.30 pm	**Semi-Structured**	**Over zoom**	**Respondent 003 and I**	**Their Role at UBC; How it is changed over time; Their**	**UBC, biodiversity, Campus, Monoculture.**

				Value of Biodiversity.	
4. March 24th, 2020 9.30-10.30 am	**Semi-Structured**	**Over zoom**	**Respondent 004 and I**	**Their Role at UBC; How it is changed over time; Value of Green Spaces.**	**Recruitment, UBC, Green Spaces.**
5. March 26th, 2020 1.30-2.30 pm	**Semi-Structured**	**Over zoom**	**Respondent 005 and I**	**Their Role at UBC; How it is changed over time; Value of Green Spaces.**	**Well-being, Green Spaces, UBC, Improvements**

All respondents' interviews were invaluable when it came to the analysis of these themes; however, three respondents, 003, 004, and 005 from the Curatorial Staff, Recruitment, and Wellbeing stood out.

From the coded results, key elements included that 4/5 respondents deemed Biodiversity/Green Spaces/Ecosystem Services were used in their professional lives at least semi-regularly, with a variation on the type of use. Moreover, 5/5 respondents noted that these themes were essential and recognized in their personal lives for wellbeing and social ties.

Key results that respondents touched on professionally varied between roles; however, key summarized results from all respondents included:

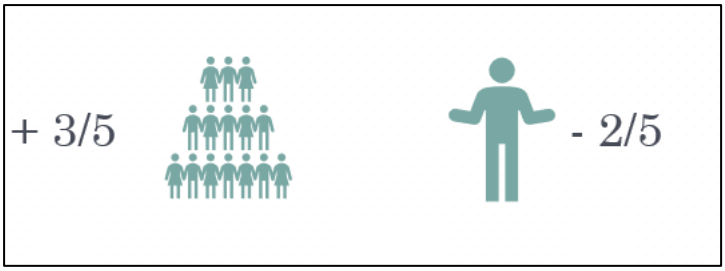

Figure 1: Respondents noted that their departments had increased or decreased in size.

<u>One key quotation from Respondent 003, shows their feelings towards resources/ department size:</u>

ME: "So how do you think the department could be improved?"

Respondent 003: "This is always a little bit of a tough one. The natural history collections in the world art are. Usually understaffed and underfunded. And as much as people can say that about every department therein. Our budget has not increased since I started my job 14 years ago."

This quotation speaks to the variation around how respondents view resources and how staff members have differing opinions around this subject. I think in my opinion, some see the resources as to how the departments are valued by UBC. Whereas other respondents saw the changes as purely being part of ebbs and flows of university priorities.

Figure 2: All Respondents felt that UBC's campus was intrinsically beautiful and unique.

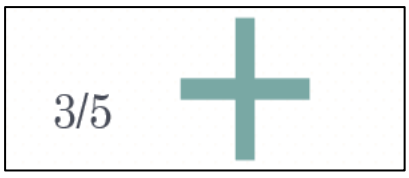

Figure 3: 3/5 Respondents hoped that UBC would directly increase its valuation of these themes around campus. **This was a critical interview and the analysis and quotations are shown below:**

Respondent 003: "Well like a classic example right there is if they have a grove of our Arbutus trees that are right there."

Respondent 003 touched on a few themes in our interview, including those around wellbeing and cultural and biological diversity. For example, using examples of how native first nation plants could be reincorporated into UBC, to reach a few objectives of biodiversity, both biologically and socially.

Me: "Yeah."

Respondent 003: "And you know that's a classic example where it'd be nice to have some sort of interactive device or sign that basically let people know like that. It is the only broadleaf tree that's native to all of Canada. Yeah, there's some great stories that come from First Nations about arbutus, trees and then if you go south they're called Madrones."

I feel like this interview also struck me as one that personally developed both our intrinsic values around nature and naturally sparked a passionate flow about how important these themes are both in life but also at UBC. This key point was one which really struck me, during the entire process, and made me think about the ways biological, cultural and social initiatives around these themes could be explored.

Respondent 003: "So this could even be a Cultural language area where you could learn about different languages and how people have different names for the same thing. So, there's some real opportunities and you know, we've talked about these, you know, these patches that are across campus that are have great stories in them. And they're just on the side and, you know, right there, there's one of the first trees that opens right now for hummingbirds and some of the first food that's available for hummingbirds."

These sorts of ideas would improve biological and cultural diversity but also would get at more values around biodiversity by promoting students' access and inclusiveness to different areas on

campus. Respondent 003 also touched on current biological improvements that are in the planning stage, including a biodiversity meadow at UBC.

Other results included:

- All departments felt like more resources could be given to their departments;
- **One Respondent felt that UBC, had made great strides and was a real leader in terms of wellbeing but highlighted the need for Campus-Wide Improvements around wellbeing and Green Spaces:**

1. Respondent 005: "I think UBC is far ahead of everybody else and partly because we had that same leadership and sustainability. So, both sustainability wellbeing our core priorities of our university strategic plan. And that's pretty unique.""

I think Respondent 005 highlights some other social valuations of these themes and contributes to the importance of nature inclusive wellbeing as well as noting how great UBC has progressed recently.

2. Me: "Personally, do you think nature or engage with natural themes is important?"

Respondent 005: "I mean, obvious and critical. I think it's underestimated in most colleagues work in the world being space. Don't talk about that area enough."

3. Respondent 005: "And the goal is to get a bit more vibrancy so that the shift, I think has been incredibly positive. Obviously, more is better. And the research is overwhelming around the health and environmental benefits of bringing biodiverse green spaces into everything that we can. And I think there's a big opportunity to do more than that in our buildings."

Respondent 005 also touched on the improvements in the Built Environment at UBC, but also how they need to keep improving. Improvements included suggests creating more sustainability initiatives and to continue to strengthen social wellbeing via the Built Environment program at UBC.

Other Results included:

- All departments felt like more resources could be given to their departments;
- One Respondent felt that UBC, had made great strides and was a real leader in terms of wellbeing but highlighted the need for Campus-Wide Improvements around wellbeing and Green Spaces;
- All respondents felt that it was hard to compare UBC's departments with others;
- Other themes discussed included how departments were run and respondents' journeys to how they got that position.

Of the exercise in which I gave respondents three to improve their department wishes, I granted people respondents suggested that ways their roles could be developed included:

- Improved communication channels;
- Being more strategic with content;
- More resources;
- Improved look at spaces and planning;
- Less need for work justification.

Many of these themes were purely professional wishes; however, some were based out of a want for increased green space/biodiversity and Ecosystem services around UBC.

8.0 Discussion

Overall the results highlighted the importance of these themes both professionally and personally in respondents' lives. But also, how all respondents viewed UBC as intrinsically unique. However, the work also highlighted the need for improvements from UBC in various departments. The uniqueness was mostly based around how UBC campus is based in an beautiful location and therefore like all

special or beautiful places the natural setting of UBC was unique in itself and hard to compare with other campuses. This response was replicated in most interviews, and really signaled to me why some students, staff and academics come to work at UBC.

Other themes presented by respondents, including those relating to Chan et al. (2016). This work engaged in thinking and ideas about relational values around biodiversity and ecosystem services. Most respondents' professional valuations of these themes tended to focus on either humankind (instrumental values) or for nature's (intrinsic values). However, 2/5 respondents touched on how substantial these themes were professionally and personally, which I think began to relate to relational values around these themes. All respondents also touched on how personal themes around biodiversity/nature/Ecosystem services and green space mattered to them, and all respondents also discussed how unique and beautiful UBC campus is. This was highlighted in the results, but some key examples included the natural setting of campus and its location, while some respondents picked the differing areas of biodiversity and the cultural importance of the site.

Although the discussion around relational values is a new one, it seems to hold that these values spark conversations about the importance of these themes and strategies around trying to increase relational values around the UBC campus. This really is demonstrated by respondent 003s interview (noted in the results). In which by creating new areas of cultural and biological diversity such as using live exhibits/areas which can spark more inclusion of relational themes from students and staff, and benefit in many ways.

By providing increased areas or exhibits at UBC we can really try and keep a feedback loop of improved valuations of these themes in their respective social, cultural and biological forms. And although it is hard to quantify why these valuations matter, some key examples include those from respondents 003 and 005 which clearly showed that they value these themes and therefore seek to make differences around UBC. The importance of valuations is also reflected via understanding of cultural services in which “ Non-material benefits people obtain from ecosystems and landscape

through spiritual enrichment, reflection, recreation, and aesthetic experiences" (Christie et al., 2012). These valuations are clearly already apparent at UBC through wellbeing, social and cultural ties however increasing these valuations and themes would only strengthen these relationships but also improve UBC as a whole.

One possible option around improving some of the themes would be to implement a framework that could encompass a mandate around including and improving UBC's valuations of these themes, but biological and cultural diversity as well as ecosystem service ideas around wellbeing. One such framework that could be used is the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) as a basis for UBC's Biodiversity framework. This framework was developed in the wake of the Millennium Ecosystem Assessment. The framework has several different elements to it but focuses on the links between nature and people. The key features include: "nature; nature's benefits to people; anthropogenic assets; institutions and governance systems and other indirect drivers of change; direct drivers of change; and good quality of life" (Díaz et al., 2015). The real benefits of using this framework could lie in its feedback loop. The premise of the framework/feedback loop is that it encompasses several elements, including intrinsic values around biodiversity and ecosystem services, ecosystem services, quality of life, and of course, human wellbeing. I feel like this framework (if implemented) could create a mandate around trying to develop initiatives around improving all these areas leading to key improvements at UBC, with examples of how this could be done, shown below.

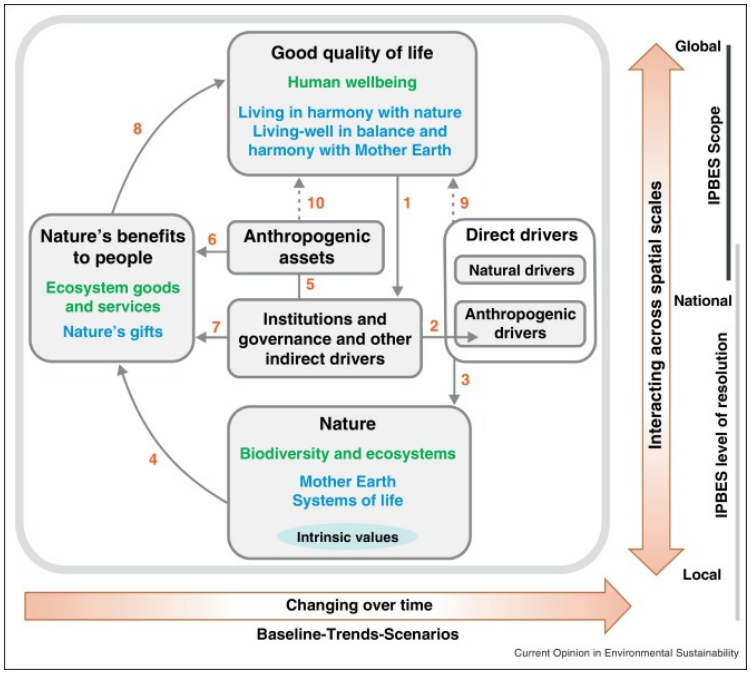

Figure 4: Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) diagram (Díaz et al., 2015).

This approach could be implemented as a UBC policy that also incorporates natural wellbeing, biological, and cultural diversity that link in with the great work that UBC is already doing in the wellbeing center. This approach should also include direct actions that increase stewardship, care, relational values, and diversity on campus. One idea could be to increase directed areas and planning to create areas of biological and cultural diversity on campus. These areas could include different natural flora around campus and increase habitat heterogeneity, which would complement the green roofs and biodiversity meadow, which are already in place or production at UBC. But also, to create cultural areas and exhibits perhaps around first nation flora and fauna. These directives should hopefully spark more relational values as well as increased wellbeing, stewardship, and care at UBC (West et al., 2018).

Overall the themes presented made me think to try and implement more interactive areas around the UBC campus in order to achieve increased relational, cultural, and biological values around UBC. This project demonstrated key themes of biodiversity around some relational values, as well as ideas

around wellbeing, workplace management, and departmental improvements. This cross-section of topics discussed led me to try and pick out possible improvements around relational, cultural, and biological values, which could lead to improvements around the UBC campus, and a possible biodiversity/ecosystem services framework.

8.1 Overall Recommendations include:

From the themes developed from my interviews, key recommendations are shown below:

- To try and look at incorporating a framework such as the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES);
- To try and create and plan more purposed spaces around UBC campus including those directly for Cultural diversity;
- To also design and deliver increased biological Habitat heterogeneity around UBC wherever possible and therefore improve biological diversity on campus;
- For UBC to Continue to support themes of biodiversity and Ecosystem Services including around relational values, wellbeing, care, and stewardship;
- And also, to deliver more significant support and inclusion for staff around these themes and to use them as biodiversity Champions of UBC;
- To try and continue to improve interconnected valuations and thinking about these themes by enhancing connectivity and communication channels.

9.0 Conclusion

Overall, I hope these themes, along with the work done by UBC in the past and currently can incorporate many different looks at biodiversity, Ecosystem Services, and Green Spaces and be used to develop a UBC Biodiversity Action plan moving forward. As noted clearly from my research speaking to the staff members allowed me to gain a deeper understanding of how these values relate differently to different people both professionally and personally. As well as how these

valuations and appreciation's of UBC can improve UBC in different ways. UBC is a special pllace but as noted here by the ideas and valuations of these themes so are the people who work here.

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