

Designing Pollinator Ecologies in Home Gardens

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Advised by **frog**

Executive Summary —

Problem Overview

Research shows that pollinator numbers are in decline, which poses a great risk to us as they have a big impact on ecosystems and food production around the world. The primary reason for the decline is habitat loss. This study aims to look at how homeowners with plantable spaces might help contribute to a solution through gardening to create pollinator habitats.

Recommendations

The guiding star of our project is to create a solution to help pollinators. However, we'd like it to be mutually beneficial and help gardeners during the long, cyclical process of gardening. Opportunity areas include garden planning and forecasting, community & mentor connection, maintenance help, and information or resource sharing.

Key Insights

The current narrative on pollinators is hyper focused on honeybees, which doesn't tell the whole story. To help create holistic solutions, the full spectrum of species should be considered. In navigating information on pollinators and gardening in general, we found that many participants shared a lot of information, resources and tools with their neighbors. However, an overabundance of information often made it intimidating to get started and even commit to some choices, like picking plants. Therefore, gardeners really valued trustworthy and consistent advice from local "experts," especially when it came to getting started or troubleshooting along the way. Lastly, gardeners aren't afraid to dream big, but are constrained within their abilities, available time, money and knowledge. Lacking in one or more of these can be a barrier to entry and can also lead to feelings of inadequacy.



Photo: Pollinator Garden, P5

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Meet the Pollinators



Birds



Bees



Flies



Moths



Butterflies



Wasps



Beetles



Bats & other small mammals

A Pollinator *Crisis*

Cause and Effect

Pollination is the act of transferring pollen from a male flower to a female flower. This process is responsible for the fertilization necessary towards the production of seeds and fruit. While it can sometimes happen via wind or water, most of the time pollen from plants is transported by animals and insects [1].

While small in size, pollinators are an essential part of our ecosystems and to our food production. They are needed for the reproduction of 90% of flowering plants and one third of human food crops. Although bees may be the most famous, pollinators also include butterflies, moths, beetles, flies, birds, and bats among others [2,3].

Unfortunately, pollinator populations are in decline worldwide [4,5].

As Pollinators function to fertilize 80% of crops, a collapse in pollinator populations would mean disaster for food production across the globe [6]. But this also has other ecological impacts as well. Many plants that need pollination also help to purify water, prevent erosion, clean our air, supply oxygen, and support other types of wildlife [6]. A collapse of these systems would have negative impacts for life here on Earth.

No Habitat, No Life

Pollinator declination can be attributed to 5 primary reasons [7,8]:

- 1) Habitat loss
- 2) Non-native species
- 3) Pesticide use
- 4) Climate change
- 5) Parasites & diseases

One of the largest causes of pollinator declination is due to habitat loss cause by human development [9]. Destruction of pollinator habitat reduces the number of available native food sources and overwintering spaces. Pollinators need pollen for protein and also need flower nectar for amino acids [10]. Just like us, they need a diverse diet to stay healthy. Native plants are a key here because pollinators are adapted to feed and survive the winter on specific plant species, thus in turn many non-native plant species are ignored [11]. Without their food and habitat sources, they can become malnourished, succumb to disease and die.

There have been efforts to combat pollinator declination but unfortunately, some have been steeped in misinformation or focused on myopic viewpoints. For example, many companies and organizations have inflated the importance of honey bees and have used 'bee-washing' (a type of greenwashing) to boost their image [12]. In reality, the majority of bees are actually not honey bees, and only a few species of bees make honey. Furthermore, as the trade of managed honey bees increases, non-native diseases can be spread to wild bees who have trouble fighting them off due to a lack of evolutionary history [13, 14].



“People mistakenly think keeping honey bees, or helping honey bees, is somehow helping the native bees, which are at risk of extinction. Beekeeping is for people; it’s not a conservation practice”

-Sheila Colla,
Assistant Professor and Conservation Biologist at York University [15]

A Solution that's in our Own Backyards

In this study we will be focusing on strategies and stakeholders with latent potential to increase pollinator habitat and therefore total pollinator populations.

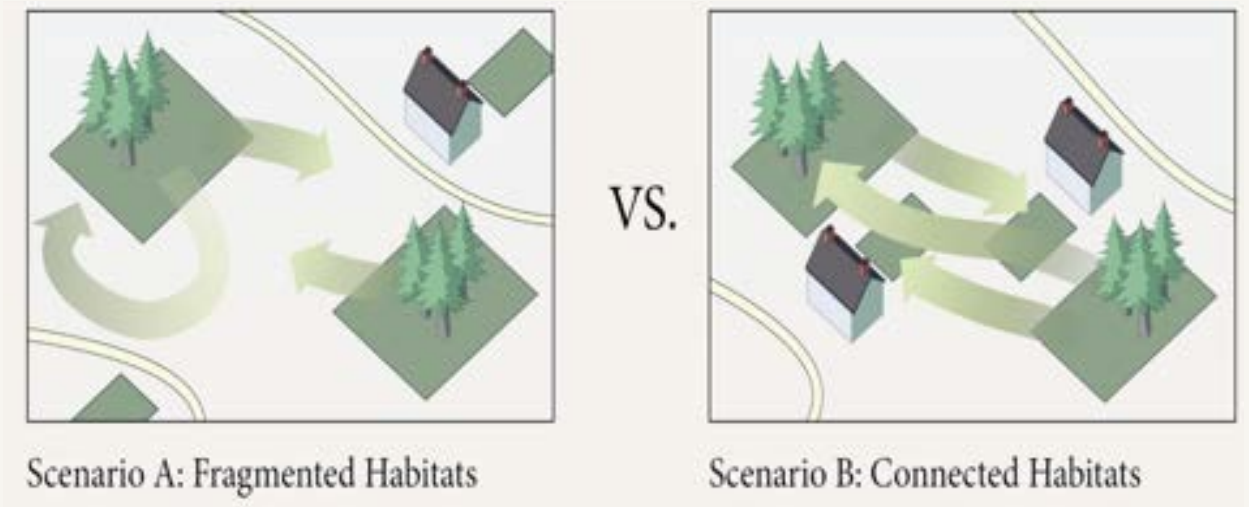
A study done in 2005 shows that there is over 40 million acres of grass lawn in the United States [16, 17]. What was once a status symbol now is a threat to biodiversity. Lawns are homogenized and are normally cleared of unwanted plant and animal species, typically with synthetic pesticides which can cause great harm [18].

The optimal foraging distance for native pollinating insects is about 50 ft to 1/2 mile, while the optimal foraging distance for nonnatives is 1 mile or less [19]. Overall, they need safe places to rest and refuel as they make their pollination rounds. By utilizing private properties and lawns as stepping stones, it could connect landscapes to allow for the free flow of species across a healthy, native landscape. These invisible infrastructures are described as "pollinator pathways" and are spaced closely enough to create a corridor of habitat [20, 21]. Essentially, the more people can create pollinator habitats in their own yards, the more they can support local ecosystems.

Even the smallest green spaces (like flower boxes or curb strips) can be stepping stones to a greater pathway.

Over 40 million acres of grass lawn exists in the United States[4,5]

"Pollinator Pathways" can help connect landscapes by providing stepping stones from one natural area to the next. Even the smallest green spaces, can be part of a pathway.



How Might We _____



How Might We combat pollinator declination via looking at how homeowners manage their plantable spaces?

Research Questions —

How do homeowners consider pollinators when managing their plantable spaces?

1. What are the motivations for homeowners when considering pollinators in their plantable spaces?
2. What do homeowners do when managing their plantable spaces?
3. How does the broader community or landscape affect homeowners' consideration of their plantable spaces?
4. How do homeowners learn about pollinators and their importance to the overall landscape?
5. What are the opportunities for improving the process of creating and maintaining a plantable space for pollinators?



Photo: Front Yard Garden, P6

Research Methods

Expert Interviews

Participant Recruitment

Semi-structured Interviews

Journey Mapping Activity



Expert Interviews

Objective

Our objective for expert interviews was to recruit six experts from different backgrounds with different perspectives on managing plantable space and pollinators i.e. (biologists, landscape designers, environmental planners) to help validate desk research, and bring light to new insights that could then influence our questions and process during the following participant interviews.

We recruited experts from our connections through a website called "Expertise Finder Network" and local channels.



Expert 1

Caroline Villanova

Master Native Plant Steward

Caroline Villanova works for Mountains of Sound Greenway Trust. Her organization works with the forest service, land owners, cities, and tribes to help manage over 1.5 million acres of public lands in Washington.

These partnerships help connect the public to nature through outdoor recreation and conservation work. Caroline's broad experience working in Washington brought us a valuable local perspective on hands-on conservation best practices.



Expert 2

Sarah Bergmann

Non-Profit Founder

Sarah Bergman is the founder of a non-profit called Pollinator Pathways. She started Pollinator Pathways to try to redefine the relationship between people and the land they occupy, especially when it comes to natural infrastructure for pollinators. Her efforts constructed a pollinator planted pathway between two parks in Seattle partnering with public and private land owners.

Sarah's holistic perspective highlighted human's responsibility to change the way we manage land. She also flagged the massive amount of misinformation surrounding pollinators and how managed honey bees have become a misleading mascot for efforts to bring back pollinator populations.





Expert 3

Gabe Lemay

Entomologist – University of Florida

Gabe Lemay does research at the University of Florida on Chemical Ecology, studying what kind of chemicals insects produce and how the manipulation of insect pheromones can be leveraged to help agriculture stakeholders and control invasive insect spread.

Gabe shed light on how insects, including pollinators use these chemicals to communicate and find food sources. He also reiterated how important native plant diversity is to pollinator survival.



Expert 4

Richard Hartlage

Landscape Architect – Land Morphology

Richard Hartlage is trained in horticulture and landscape architecture. He owns and manages a residential landscape firm of 15 employees. Richard brought the perspective of a designer who designs with an artistic and aesthetic lens before anything else. He includes many native plants in his designs, however, he also prioritizes maintainance level and disease resistance when selecting plants.

Richard brought a seasoned design professional’s point of view to our research. His experience designing and maintaining backyards from the ground up help us develop a more complex perspective of design of plantable space and its relationship to pollinators.



Expert 5

Demarus Tevuk

Native Plant Scientist – the Common Acre

With a strong background in traditional ecological knowledge, native pollinators, native plants, science, and engineering, Demarus’ research focuses on the definition of sustainability from the indigenous perspective.

There is a lot of misinformation that people need to pay attention to. Demarus mentioned that people don’t have enough education on pollinators. She brought a concept of greenwashing: “I think people raising honey bees is a greenwashing topic for companies.”



Expert 6

Rye Ryan

Co-Owner – Raintree Nursery

Raintree Nursery is a unique nursery located in Lewis County, Washington. Its known for selling unique varietals of edible plants that people can’t find at other nurseries. Rye Ryan is the Operation Manager at Raintree. She is responsible for finances, customer service, and operations.

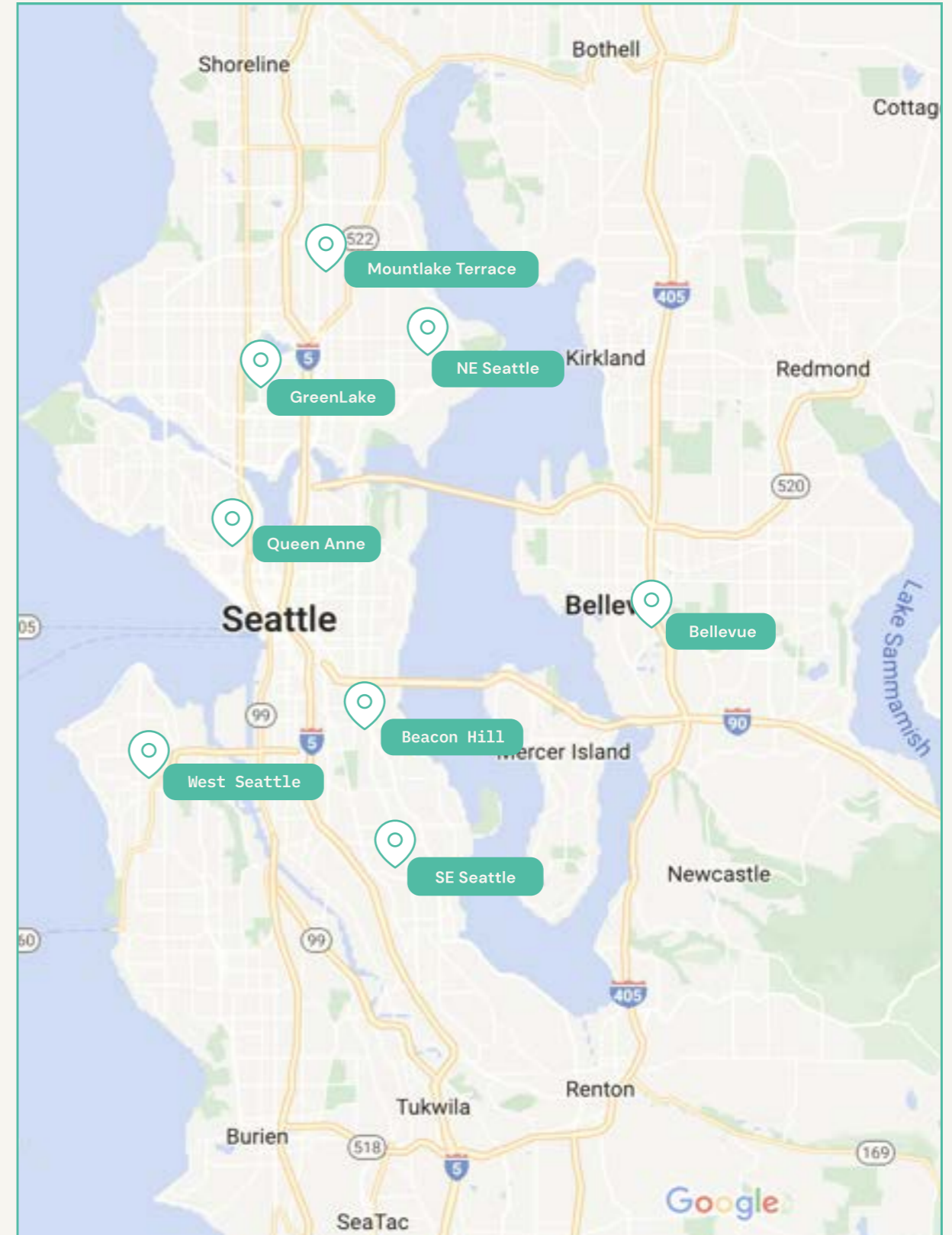
Rye provided valuable insights into different customer profiles at a niche nursery. At the nursery she guides people of all gardening skills to find easy to grow varieties to bring home and plant.

Participant Recruitment

Objective

Our objective for participant interviews was to recruit 10–12 homeowners from different areas around the city and from diverse backgrounds to maximize insights specific to the Seattle area. We recruited through social media, personal connections, and reaching out via University of Washington networks. As a result, we have recruited 10 participants for our study listed below.

Our goal was to conduct two sessions of interviews, one section for participants who were familiar with pollinators and the other whome were not.



	Locations	Gender	Pollinators
P1	Bellevue	Female	✓
P2	SE Seattle	Male	✓
P3	SE Seattle	Male	✗
P4	Beacon Hill	Male	✓
P5	Mountlake Terrace	Female	✓
P6	West Seattle	Female	✓
P7	NE Seattle	Female	✓
P8	Queen Anne	Female	✓
P9	GreenLake	Female	✓
P10	GreenLake	Female	✗

Semi-Structured Interviews —

A Garden Tour

Journey Mapping Activity

Follow-up Questions

Procedure

Our team conducted multi-part interviews with 10 homeowners, each lasting 90 minutes. In the beginning, we asked participants to give us a short garden tour and overview of their property, documenting it for later reference. Due to COVID-19, some participants chose to be interviewed remotely. In these cases, we asked them to send photos of their property in advance of a Zoom meeting.

After the tour, we sat down and began our interview. We began getting to know the participant, their background, and their relationship to their plantable spaces. After this introduction we conducted our journey mapping activity for the rest of the session.



In-Person Artifact: Journey Mapping Activity

A Garden Tour

Our goal with this garden tour was to get to know the owner and gain an overall understanding of their relationship to their gardens.

We then asked questions during the tour, for example, what strategies do use when maintaining their front and back yards, what activities they do, and what plants, if any do they plant specifically for pollinators.



In-Person Artifact: Garden Tours

Journey Mapping Activity

We created an interactive journey map to use during our in-depth interviews. Here, our goals were to gain perspective on the process of planting, understand areas of struggle or workarounds, and uncover potential design opportunities. It also provided a basic activity to keep participants engaged during the interview. The activity, lasting around twenty minutes, was broken into sections. The first section of the activity used the following prompt:

Imagine that you have a new space for planting. Please think about the phases of building your garden and order them here.

This activity encompasses every step a homeowner takes. We provided a few prompts to get them started, and encouraged participants to speak aloud their thoughts. Knowing their personal journey allowed us to gain a more intimate understanding of the planting process and inform our potential design opportunities. We divided the activity into three parts:

Part 1

The goal of part 1 is to learn about the general process of how homeowners plan and order their yards.

Part 2

The goal of part 2 is to invite participants to look into each step from the beginning, and learn about the user's specific behaviors and tools they use during each of the phases.

Part 3

The goal of part 3 is to learn about the user's feelings. This steps was very useful for uncovering some potential opportunities.



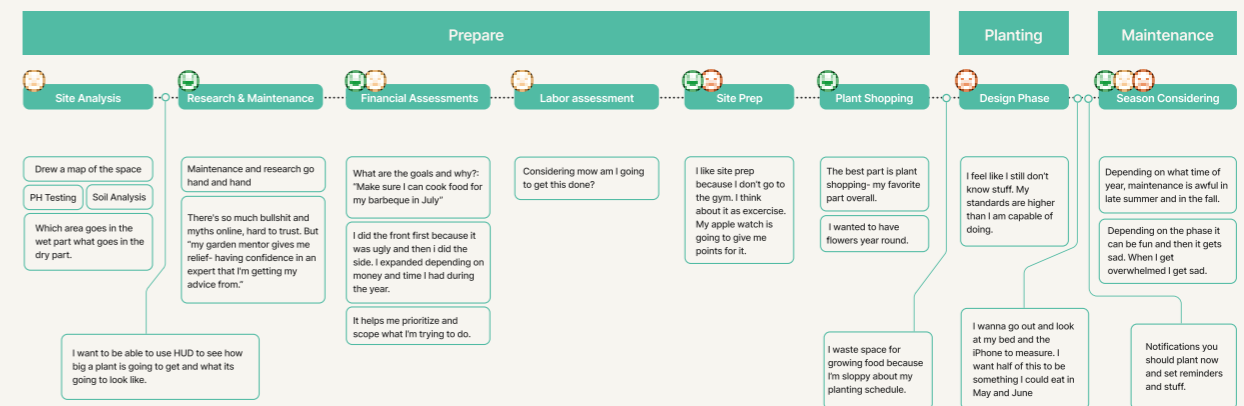
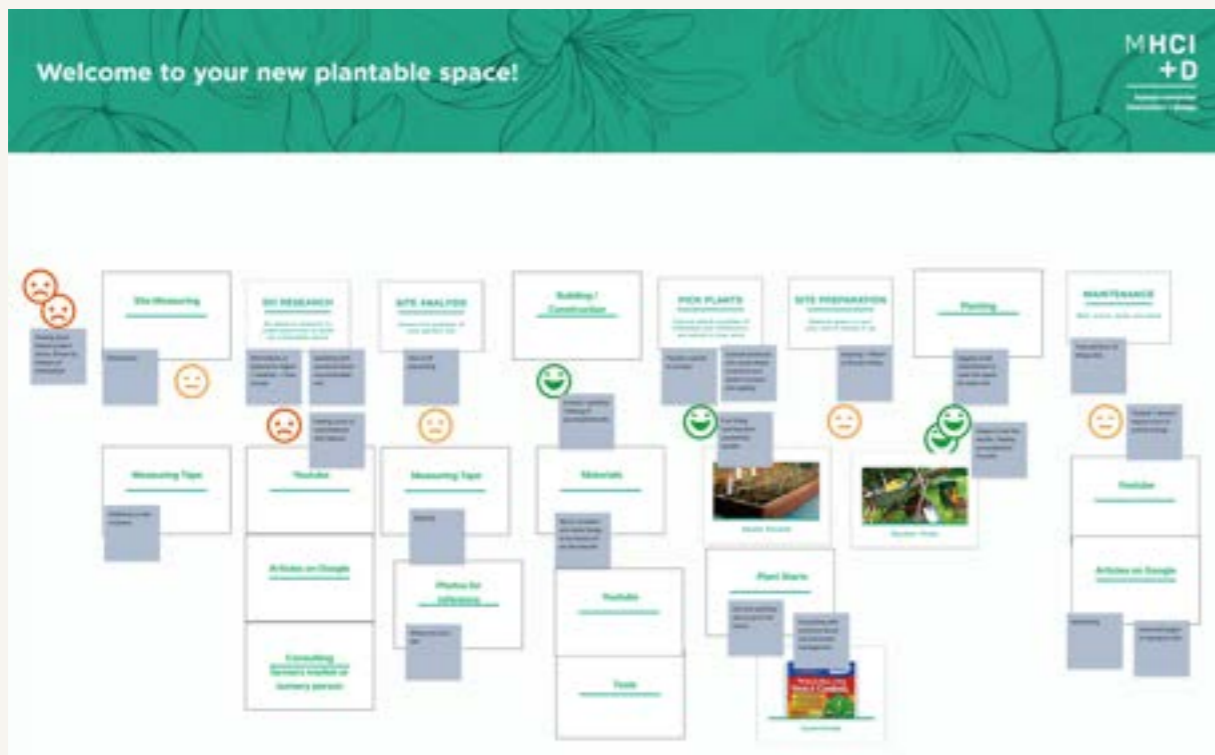
Artifact Analysis

Because each participant has their own thoughts on planting and how the phases go, we made sure to review the journey mapping data once we finished each interview.

In this artifact analysis, we highlighted some quotes from the participants from each phase, like what aspects needed improvement or which ones were enjoyable. We noted their wishes and hopes. Overall, it helped us to discuss the data efficiently as a team.

This is an example of process data that we pulled from one of our participants:

In-person Artifact: Experience map completed by P1

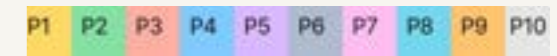


Remote Artifact: Experience map completed by P10

Sense Making & Data Analysis

After our interview process was complete, we externalized our data onto sticky notes of a miro board to do an Affinity Diagramming. We organized data into different themes which led to the generation of insights.

We then selected some of the emerging themes to dive into. Some examples included “Self Performance / Anxiety”, “Neighbors”, “Goals & Wishes”, “Learning from others” and “Resouces”.



Insights —

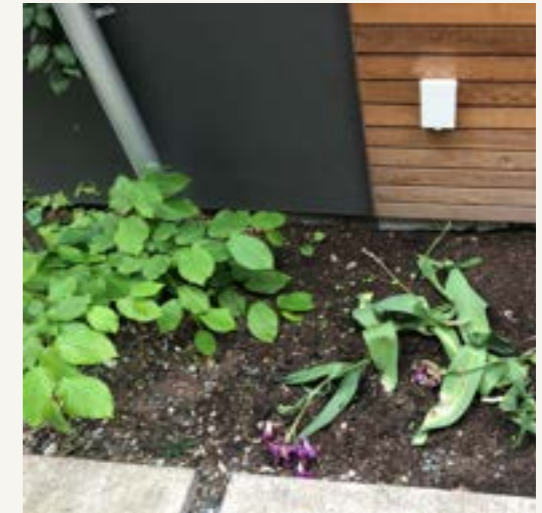
We formalized five main insights from synthesizing our data of ten participant sessions, six expert interviews, and our secondary research.

1. Trial and error must be part of the gardening process to help increase self confidence and learning.
2. Local expert knowledge helps to set parameters and provide personalized troubleshooting so gardeners are more likely to succeed in their choices.
3. Making a dream garden requires a balance between ability, time, money and knowledge and lacking these can be a barrier to entry.
4. Growing and maintaining a garden builds social capital, encouraging an environment where information, inspiration and tools are more frequently shared between neighbors.
5. The current narrative on pollinators, hyper focused on Honeybees, doesn't tell the whole story.

Insight 1

Trial and error must be part of the gardening process to help increase self confidence and learning.

"With any projects like this I get intimidated and I stall at the beginning ... I'm not impulsive at all so if I'm going to do something, I like to do a lot of research before." -P10



Plants are living things so the stakes of failure are higher and error can be seen as unacceptable, lowering tolerance for mistakes. Gardeners are also conscious of the wider community and that their choices and errors are seen and judged by the community.

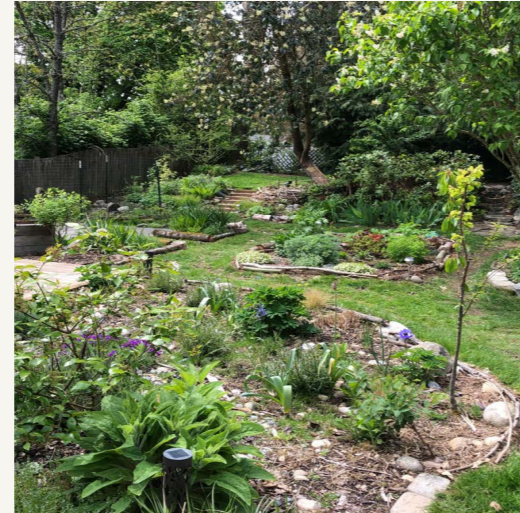
Fear of error puts pressure on gardeners to get it right the first time, heavily weighing choices when getting started and committing to plans. It is critical to help gardeners understand that trial and error must be part of the process.

HMW build confidence in garden design and planting choices?



Insight 2

Local expert knowledge helps to set parameters and provide personalized troubleshooting so gardeners are more likely to succeed in their choices.



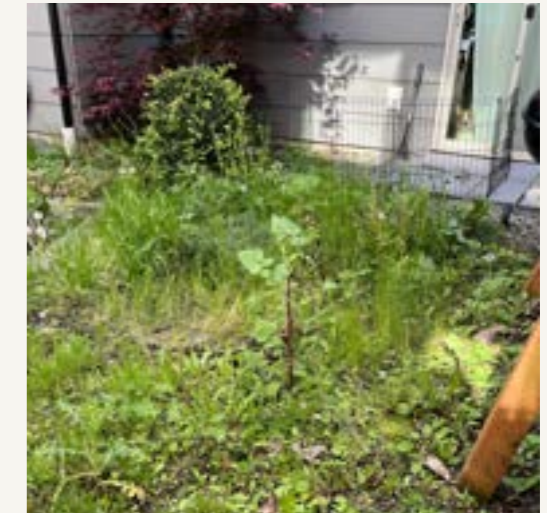
Local here is key. Local experts more with resonate with homeowners since the locals are more likely to go through similar issues due to similar seasonality and climate of the region.

We found that all participants sought local expertise through friends, nursery workers, and social media connections to gain more advice on plant selection and care. Unfortunately, many got all their information at the “point of sale” like the nursery or farmers market and then struggled to find mentors through the planting and maintenance process.

HMW make it easier for individuals to find and maintain trustworthy mentors?

Insight 3

Making a dream garden requires a balance between ability, time, money and knowledge and lacking these can be a barrier to entry.



Our participants were not afraid to dream big in the planning phase, however, there was a gap the ideal garden and the gardeners ability to carry out that plan. When it came down to choosing plants and getting their hands dirty planting, most people paired down their plans to minimize time, money, and maintenance.

How we might be able to balance gardener expectations with the reality of the situation.

“[I should go to] Therapy so i’m not so hard on myself... My standards are higher than I am capable of doing.” -P1

Insight 4

Growing and maintaining a garden builds social capital, encouraging an environment where information, inspiration and tools are more frequently shared between neighbors.



Participants focused on how the garden was a bridge for community building. Neighbors often shared tools, materials, and even plants with each other. Something that we heard from each participant, without fail, was they they would walk around the neighborhood to get inspired for their garden, or that they were gardening hoping to inspire their neighbors. Either way, the effect of a single garden appeared as something that was rarely isolated to one household.

HMW help facilitate resource and tool sharing between community members?

"I think it's a community thing. You talk to people and find people you trust, like [my neighbor] two doors down...he's always asking us 'do you guys need compost?'" -P6

Insight 5

The current narrative on pollinators, hyper focused on Honeybees, doesn't tell the whole story.



Something that we hear from experts and then observed in our participants was that there is a wide variety of understanding of pollinator ecosystems. With many of our participants there was a hyperfocus on the more famous pollinators like the honey bee as a representative of the pollinator plight.

In order to create wholistic solutions to help pollinators, the full spectrum of species and their needs must be part of the story.

HMW help people incorporate pollinators into their planning in an effort towards a larger, healthy ecosystem?

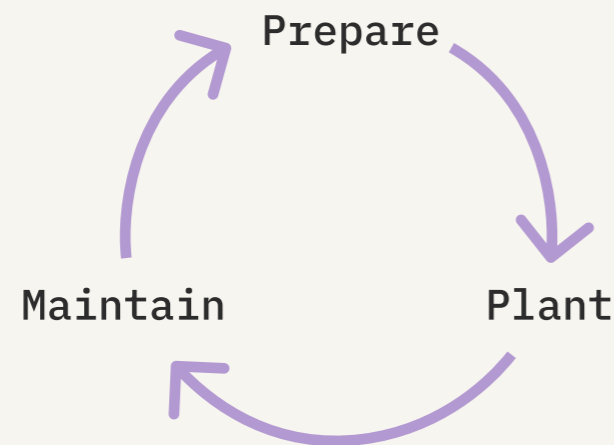
"There's been more in the news lately because there's been trouble with bees." P7

"I don't know what the hell I'm doing out here. The butterflies are way smarter than me" -P2

Design Opportunities

The backbone of our project is to help pollinators. But we also want to ensure we're creating a useful tool for gardeners: something they can utilize during the cyclical phases of the gardening process.

We want to ensure a potential solution would not make the gardening process harder. We also want to avoid adding a tool that would increase the already steep barrier to entry. Lastly, we want to ensure we're creating something that doesn't contribute to existing greenwashing that's happened in this arena.



Garden Planning & Forecasting:

During the earlier phases, we imagine a tool that could help with the planning and forecasting would be super beneficial. Some participants mentioned they would love a planner that could guide them on when to take certain actions (like when to plant or when to water). Another wish we heard echoed was for forecasting. Having a tool that could help gardeners envision what their tree could look like in 5 years and how it would impact the shade, or how big the blueberry bush was going to grow in a certain spot may facilitate easier planning.

Community & Mentor Connection:

During the preparation or planting phases, another opportunity is in local mentor and community connections. Many participants mentioned speaking with neighbors, visiting local nurseries, and attending classes to help them learn. Participants who had a consistent mentor or friend they could go to for troubleshooting seemed to have more success in their gardens and were more confident.

Information & Resource Sharing

During preparation and planning, gardeners traded information, plant seeds and starts, tools, soil, compost, branches, or other resources they needed. This was often done through Facebook or through neighbors. By helping to facilitate with this process, we may lower the barrier to entry for some gardeners, especially where finances are concerned.

Maintenance:

In the maintenance phase, there was a general sense of frustration with some of the work that goes into it. For many participants, it was their least favorite part of the process. We'd be interested in exploring how we can help to ease the burden of maintenance or help people to better understand how much maintenance is required for certain plants or tasks (like watering). We could even try to help answer maintenance questions people had like "When is the right time to prune this plant?"

Prepare

Plant

Maintain



Photo: Greenhouse, P8

Appendix ---

Citations

Initial Research Plan

Recruitment

Consent Form

Expert Interview Guide

Participant Interview Guide



Citations:

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Images sourced from NounProject.com: *Hand Drawn Herbs* and *Tasty Fruits* by Marcel Dornis. *Hive* by Martin Lebreton. *Insects* by Tatyana. *Bat and Owl Icon Collection* by Hey Rabbit.

Initial Research Plan —

“At the end of the day if gardeners are out there doing their thing, they’re helping to connect landscape to landscape.”

-Sarah Bergmann

Intro

Our project revolves around investigating the challenges pollinators face and how we might grow and maintain healthy pollinator populations. While small in size, they are an essential part of our ecosystems and to our food production. The largest cause for pollinator decline is due to habitat loss. Destruction of habitat reduces the number of available native food sources. Other factors contributing to the decline are pesticide use, climate change, parasites, and diseases. In this study we will be focusing on stakeholders and strategies with latent potential to increase pollinator habitat and therefore total pollinator populations.

Opportunity

Most pollinating insects can fly no further than 750 meters, requiring frequent spaces to rest and feed. Pollinator Pathways are public and private pesticide-free corridors of native plants that provide nutrition and habitat for pollinating insects and birds as they move across a landscape. We would like to find new opportunities for increasing the density and frequency of these pathways.

Research Objective

In 2005 there were more than 40 million acres of unplanted lawn in the United states. We are trying to learn how homeowners, owners of this untapped plantable space, can be further leveraged in the effort of improving pollinator populations.

Research Question

How do homeowners consider pollinators when managing their plantable spaces?

Sub-questions

1. What are the motivations for homeowners when considering pollinators in their plantable spaces?
2. What do homeowners do when managing their plantable spaces?
3. How does the broader community or landscape affect homeowners' consideration of their plantable spaces?
4. How do homeowners learn about pollinators and their importance to the overall landscape?
5. What are the opportunities for improving the process of creating and maintaining a plantable space for pollinators?

Research methods & tools

Interviews

We plan to conduct two sessions of qualitative interviews with two groups of people.

Part 1: 60-minute semi-structured interviews with 6 Experts in different categories (biologists, landscape designers, environmental planners, etc.) with a goal of validating desk research on how to best manage land for pollinator health and shedding light on existing challenges.

Part 2: 90 minute Interviews (including a garden tour and journey mapping activity) of 10-12 homeowners. Using the insights gleaned from our experts, we seek to interview homeowners in the Seattle area who are familiar with gardening and trying to help pollinators.

Part 1 – Participant Profile: Experts

Our objective for part 1 of our research is to recruit 6 experts from different backgrounds to help validate desk research, provide invaluable insights and shed light on existing pain points. We intend to recruit from our personal connections, through a website called “Expertise Finder Network”, and through local channels. As a result, we seek experts in different fields:

Trait	Details	Rationale
Land Trust Employee	Master Native Plant Steward at Sound Greenway	Work on creating conservation corridors
Scientist	Pollination Ecologist	They study how to help pollinator growth
Non-Profit	Tilth employee	Focus on food access, farming and gardens. Work towards “Sustainable futures”
Professor	Biology prof focusing on Climate Change	Help validate research on climate change impacting
Community Garden Leader	Employee of P Patch	Know about community engagement around local landscape and food systems
Landscape Designer	CEO at Land Morphology (Seattle based)	Can shed light on planning processes

Part 2 – Participant Profile: Homeowners

Our objective for part 2 of our research is to recruit 10–12 homeowners from different areas around the city and from diverse backgrounds to maximize insights for Seattle. We intend to recruit through social media, personal connections, and reaching out via UW networks. As a result, we have specified the following hard criteria:

Trait	Details	Rationale
Geography	Within Seattle: 25% North 25% Downtown 25% South 25% Outside the Seattle proper	Target areas around the city of Seattle represented different population densities and avg. income
Plantable Spaces	Must have some green space/planters/beds with native plants	Component to our research objective
Gender	Female: 50% (4–5 recruits) Male: 50% (4–5 recruits) Non-Binary: As identified	Diverse gender identity
Age	Gen Z (18–25 yo): 1–2 recruits Millennial (26–41 yo): 2–3 recruits Gen X (42–57 yo): 2–3 recruits Boomers (58+ yo) 2–3 recruits	Distribution of age
Ethnicity / Racial Background	White- 50%: 5–6 recruits Hispanic- 20%: 1–2 recruits Black - 10%: 1–2 recruits Asian - 10%: 1–2 recruits Other - 10%: 2 recruits	US Census Distribution
Income Levels	>\$35k: 1 recruit \$35k - \$75k: 2–3 recruits \$75k - \$129k: 2–3 recruits \$140k–\$200k: 2–3 recruits \$200k+: 2–3 recruits	Diverse income
Goal of Helping Pollinators	50% of participants should have familiarity with or a goal of helping pollinators	Compare results of homeowners who are more "hobby gardeners" to those who may have a personal initiative of helping pollinators

Recruitment

Our team conducted multi-part interviews with 10 homeowners, each lasting 90 minutes. In the beginning, we asked participants to give us a short garden tour and overview of their property, documenting it for later reference. Due to COVID-19, some participants chose to be interviewed remotely. In these cases, we asked them to send photos of their property in advance of a Zoom meeting.

After the tour, we sat down and began our interview. We began getting to know the participant, their background, and their relationship to their plantable spaces. After this introduction we conducted our journey mapping activity for the rest of the session.

Journey Mapping Activity Descriptions

We created an interactive journey map to use during our in-depth interviews. Here, our goals were to gain perspective on the process of planting, understand areas of struggle or workarounds, and uncover potential design opportunities. It also provided a basic activity to keep participants engaged during the interview. The activity, lasting around twenty minutes, was broken into sections.

This activity encompasses every step a homeowner takes. We provided a few prompts to get them started, and encouraged participants to speak aloud their thoughts. Knowing their personal journey allowed us to gain a more intimate understanding of the planting process and inform our potential design opportunities. We divided the activity into three parts:

Step 1: Imagine that you have a new space for planting, please think about the phases of building your garden and order them here. We've provided some examples you can use or don't have to use them. And if there are any phases that are missing, tell us and we will create a card for you. Please think out loud and explain as you're putting the cards down.

Step 2: Please look into each step, and think of what you are likely to do. Please organize which tool you might use during each step.

Step 3: Please tell us which phase you enjoy the most and which phase you enjoy the least. If you can think out loud as you place the faces, that would be helpful.

Recruitment —

"Most important is people care about things they care about....so as long as it's a hearty native plant. "Omg i want a pink flower..ok the native red currant -that's for you"

-Caroline Villanova

Screener Invite:

Hi there!

We are a group of UW students from the Human-Computer Interaction and Design program. We are conducting a study to review how homeowners currently use their plantable spaces (yard, garden, etc) in Seattle. If you have a plantable space, we'd love to hear from you! Please take a moment to fill out our survey here (should take ~5 mins): <https://bit.ly/37GmqTT>

If you are selected for an interview, you will be compensated with a \$20 gift card for your time.

If you know anyone who might be interested in participating, feel free to share this link with others.

Thanks!

Section 1 of 3

Pollinator Pathways

Thank you for your interest in our research study, "Pollinator Pathways"! This study is being conducted by Masters students from the University of Washington's Human-Computer Interaction and Design program. The purpose of this study is to review how homeowners currently use their plantable spaces (yard, garden, etc). Your responses will be kept private and deleted upon project completion.

Following the completion of this survey, we'll reach out with next steps for an interview. Interviews will be approximately 90 minutes and Participants will receive a \$20 gift card, as a token of our appreciation.

If you have any questions regarding this study, please feel free to contact us at mikcor@uw.edu, dong426@uw.edu or nbrown22@uw.edu

Do you own your home?

Yes

No

Do you have plantable space in or around your property? (Plantable Space defined as a yard, garden, etc.) *

Yes

No

If you answered Yes above, please describe your plantable space(s) in a few words.

Long answer text

Section 2 of 3

Pollinator Pathways



Your responses will be kept private and deleted upon class completion.

What is your name? *

Short answer text

What is your email address? *

Short answer text

What is your gender identity?

Short answer text

What is your age?

- 18 - 25 years old
- 26 - 41 years old
- 42 - 57 years old
- 58 + years old

What is Your Ethnicity / Racial Background?

Short answer text

...

What is your total household income?

1. Less than 10,000
2. \$10,000 to \$29,999
3. \$30,000 to \$49,999
4. \$50,000 to \$69,999
5. \$70,000 to \$89,999
6. \$80,000 to \$99,999
7. \$100,000 to \$139,999
8. \$140,000 to \$179,999
9. \$180,000 to \$219,999
10. \$250,000 or more

Where in Seattle do you live?

1. Ballard
2. Beacon / Georgetown / South Park
3. Capitol Hill / Eastlake
4. Central Seattle
5. Delridge
6. Downtown
7. Fremont / Green Lake
8. NE Seattle
9. North Seattle
10. NW Seattle
11. Queen Anne / Magnolia
12. SE Seattle
13. West Seattle
14. Bellevue
15. Other


Who is responsible for maintaining your plantable spaces?

Short answer text



What do you use your plantable space for? Please select all that apply:

- Growing food (vegetables, fruits, herbs etc.)
- Providing habitat & food for pollinators
- Growing flowers
- Making the space around the house look nice
- Raising chickens
- Space for outdoor activities
- Other...

After section 2 Continue to next section 

Section 3 of 3

Thank you!



Thank you for completing our form! If you are selected to participate, we will contact you to schedule an interview, which will take approximately 90 minutes in total. If you have any questions regarding this study, please feel free to contact us at mikcor@uw.edu, dong426@uw.edu or nbrown22@uw.edu

Consent Form —

"Go start gardening, that's how you learn plants."

-Richard Hartlage

Consent Agreement

Research Study: "Pollinator Pathways"

Researcher / Emergency Contact

Mikaela Corney, Master of Human-Computer Interaction & Design student, University of Washington

Email: Mikcor@uw.edu

You are being invited to participate in a research study titled "Pollinator Pathways". This study is being done by Masters students from the University of Washington's Human-Computer Interaction and Design program.

The purpose of this study is to review how homeowners currently use their plantable spaces. Our primary objective is to learn from your experience, so there are no right or wrong answers. If you have any questions regarding this study, please feel free to contact us at the email or phone number above.

If you agree to the terms and participate in the study, you will be asked to complete one 90 minute recorded interview, either in person or over Zoom, where we will ask questions about your experiences with planning and managing your plantable spaces. In turn, you will receive a \$30 gift card as compensation. Your participation in this study is entirely voluntary. During the interview, you may withdraw your consent at any time. This could mean skipping a question, taking a break, or ending the interview early. If you end participation early, we will ask for your consent again before using any data gathered during the interview.

Participant's Statement:

I have read and understand the provided information. I am at least 18 years old and I understand that my participation is voluntary and that I am free to withdraw at any time. I voluntarily agree to take part of this study.

Participant's Signature: _____

Participant's Printed Name: _____

Date: _____

Expert Interview Guide —

“Bugs get overlooked a lot, and the services they provide to our environment are immense. Pollination is a free service they provide.”

-Gabe Lemay

Introduction:

“Thank you so much for taking time to speak with us today. We’re so excited to talk to you about your area of expertise and to learn from you and how it could help our research on pollinators.

We would like to record this session and share the results with the rest of our three-member team for the purpose of our class research project. We will not share your name or any other identifying information with anyone else. We will also take care to delete any data after our research project is complete.

- Can you please confirm if it is okay that we take a recording?
- Can you please give us permission to quote any verbal statements you make during the interview?

Please know, you may withdraw your consent at any time. This could mean skipping a question, taking a break, or ending the interview early. If you end participation early, we will ask for your consent again before using any data gathered during the interview. Do you have any questions before we get started?”

[Facilitator: Begin Recording]

[Moderator: Refer to appropriate guide for the expert you’re interviewing]

Expert Guide #1: Land Trust Employee**Warm Up:**

The goal of the warm up is to build rapport, establish background information and get the participant comfortable speaking.

Tell us about your Job?

(Prompt: What does it mean to be a Master Native Plant Steward?)

What are some of your responsibilities?

How did you become interested in this field?

Pollinator Spaces:

The goal of this section is to learn more about how Land Stewards come to their decisions for projects.

What types of projects do you work on?

Do you work on any projects that specifically target pollinators?

* What are some of the biggest challenges and opportunities facing our region? *

What are the local pollinator species in Seattle?

What kinds of plants, flowers (including trees and shrubs) would you recommend homeowners grow in Washington to improve diverse pollinator populations?

*Do you have any suggestions for individuals as to how they can contribute to pollinator-friendly environments? *

Process:

The goal here is to learn more about what kind of technology or tools exist to better understand the landscape and to illuminate any existing pain points.

* What sorts of tools do you use in the industry to help you with your work? *

When it comes to improving pollinator growth, are there any considerations our team should know about?

* What things have you seen tried in the past that did not work? *

Dongming & Mikaela do you have any questions?

[Moderator: Navigate to Conclusion Section]

Expert Guide #2: Scientist – Entomologist

Warm Up:

The goal of the warm up is to build rapport, establish background information and get the participant comfortable speaking.

How did you get interested in this field?

Why bugs? Who cares?

What does a typical work day look like for you at the University of Florida?

What are the impacts of insects in an ecological system?

How does the human reaction to bugs (usually “gross”) impact them?

Pollinator Spaces:

The goal of this section is to learn more about what Scientists would recommend when it comes to pollinators.

In your area of expertise, does your research intersect with pollinators ?

[Prompt:] In the bug world, are pollinators identified as unique bugs? / What makes one type of insect a pollinator and another not?

Why should we care about pollinators(insects)?

How would you describe an ideal “healthy habitat” for pollinators(insects)?

How do you measure pollinator(insect) growth or declination?

What is the scale of action is necessary to make a measurable impact on pollinator(insect) populations?

What are ways we can manage urban areas most effectively to benefit pollinators(or insects)?

Process:

The goal here is to learn more about what kind of technology or tools exist to better understand the landscape and to illuminate any existing pain points.

What sorts of tools do you use in the industry to help you with your research?

Do you have any suggestions for individuals as to how they can contribute to pollinator-friendly(insect-friendly) environments?

When it comes to improving pollinator growth(insect growth), are there any considerations our team should know about?

What things have you seen tried and not work in the past?

Nick & Mikaela do you have any questions?

[Moderator: Navigate to Conclusion Section]

Expert Guide #3: Non-Profit Employee

Warm Up:

The goal of the warm up is to build rapport, establish background information and get the participant comfortable speaking.

What got you interested in working with Tilth?

Can you tell me a little bit about the Tilth Alliance's mission and what projects you work on?

Pollinators:

The goal of this section is to learn more about the work non-profit employees do and how it relates to pollinators.

How can pollinators fit into garden planning?

What are ways we can help pollinators in an urban context?

When working with farmers, how do you incentivize them in order to encourage more sustainable practices?

Does Tilth have specific initiatives to improve pollinator growth?

What kinds of plants, flowers (including trees and shrubs) do you recommend homeowners grow in Washington to improve diverse pollinators?

Process:

The goal here is to learn more about what kind of technology or tools exist to better understand the landscape and to illuminate any existing pain points.

Do you use any special tools in your job?

What is easy or difficult about working at Tilth?

Is there anything you wish you could change about the job or process?

When it comes to pollinators, are there any considerations our team should know about?

What things have you seen tried and not work in the past?

[Moderator: Navigate to Conclusion Section]

Expert Guide #4: Non-profit Board Member for Community Garden

Warm Up:

The goal of the warm up is to build rapport, establish background information and get the participant comfortable speaking.

Can you tell us a little bit about yourself and your background and how you found yourself at the Common Acre?

What kind of projects are you working on right now?

In your bio on the Common Acre site it mentions that you've done some research on approaching sustainability from an indigenous perspective. Can you tell us more about what that means and how that influences your work?

Pollinator Spaces:

The goal of this section is to learn more about what she would recommend when it comes to pollinators.

From your perspective, what is the role of pollinators? Why should the everyday person care about pollinators?

Prompt: Outside of pollination, any other important roles?

What are the biggest threats you see to pollinators?

How would you describe an ideal "healthy habitat" for pollinators?

How do you measure pollinator growth or declination?

What is the scale of action is necessary to make a measurable impact on pollinator populations?

What are the local pollinator species unique to this area?

*What are ways we can manage urban areas most effectively to benefit pollinators? *

Process:

The goal here is to learn more about what kind of technology or tools exist to better understand the landscape and to illuminate any existing pain points.

What sorts of tools do you use in the industry to help you with your research?

What kinds of plants, flowers (including trees and shrubs) would you recommend homeowners grow in Washington to improve diverse pollinators?

Do you have any suggestions for individuals as to how they can contribute to pollinator-friendly environments?

What things have you seen tried and not work in the past?

When it comes to pollinators, are there any considerations our team should know about?

Dongming or Nick do you have any questions?

[Moderator: Navigate to Conclusion Section]

Expert Guide #5: Fruit Tree Farmers

Warm Up:

The goal of the warm up is to build rapport, establish background information and get the participant comfortable speaking.

What's it like being a farmer at Raintree?

What made you want to work in this area?

Can you describe what the Raintree Nursery farm is like?

Pollinator Spaces:

The goal of this section is to learn more about what these Garden Leaders would recommend when it comes to pollinators

Are there initiatives to attract pollinators at Raintree?

How would you recommend the everyday gardener can make a pollinator-friendly space?

What kinds of plants, flowers (including trees and shrubs) do you recommend homeowners grow in Washington to improve diverse pollinators?

Process:

The goal here is to learn more about what kind of technology or tools exist to better understand the landscape and to illuminate any existing pain points.

What is easy or difficult about working in the garden?

How does the local community or your buyers impact planning of the garden?

Is there anything you'd change about the garden?

Is there anything you'd change about the process of how things are done?

When it comes to pollinators, are there any considerations our team should know about?

What things have you seen tried and not work in the past?

[Moderator: Navigate to Conclusion Section]

Expert Guide #6: Landscape Designer

Warm Up:

The goal of the warm up is to build rapport, establish background information and get the participant comfortable speaking.

What got you into Landscape design?

What's it like being a landscape designer?

What kind of projects do you work on?

How long do projects typically last?

Planning:

The goal of this section is to learn more about Landscape Designers come to their decisions and what it's like working with clients.

How do you start a project?

How do pollinators play into your planning for landscape design?

Do your clients ever want you to take pollinators into consideration?

- If Yes: What kinds of things do they ask for?
- If No: do you often try to sway them to consider those types of plants?

What "keystone plants" do you always try to utilize?

What role does upkeep play in creating a space?

How do you take into consideration placement of nearby plants and features in the community when planning?

Process:

The goal here is to learn more about what kind of technology or tools exist to better understand the landscape and to illuminate any existing pain points.

What kind of technology or tools do you use?

How have the jobs you get changed over the years?

What kinds of plants, flowers (including trees and shrubs) do you recommend homeowners grow in Washington to improve diverse pollinators?

Is there anything you wish you could change about the job or process?

When it comes to pollinators, are there any considerations our team should know about?

What things have you seen tried and not work in the past?

[Moderator: Navigate to Conclusion Section]

Expert Guide #7: Non-Profit Founder: Pollinator Pathways

Warm Up:

The goal of the warm up is to build rapport, establish background information and get the participant comfortable speaking.

How much time do you have to speak with us?

Can you tell me a little bit about who you are and what led you to study Pollinator Pathways?

What sort of projects do you work on?

What are your responsibilities?

Pollinators:

The goal of this section is to learn more about the work non-profit employees do and how it relates to pollinators.

*How can individual efforts impact the larger community of pollinators or pollinator pathways? *

How can pollinators fit into garden planning?

What are ways we can help pollinators in an urban context?

When working with the community, how do you incentivize them in order to encourage more sustainable practices?

What kinds of plants, flowers (including trees and shrubs) do you recommend homeowners grow in Washington to improve diverse pollinators?

Process:

The goal here is to learn more about what kind of technology or tools exist to better understand the landscape and to illuminate any existing pain points.

What sort of tools do you use in your job?

What is easy or difficult about working at Pollinator Pathways?

Is there anything you wish you could change about the job or process?

When it comes to pollinators, are there any considerations our team should know about?

*What things have you seen tried and not work in the past? *

Dongming & Mikaela do you have any questions?

[Moderator: Navigate to Conclusion Section]

Conclusion:

“Ok that wraps up our questions. Thank you so much again for taking the time to speak with us. This was extremely helpful for our understanding of what to consider as we move forward in our project. Do you have any questions for us at this time or anything else that comes to mind that you’d like to share?”

[Session Ends: Stop Recording]

Participant Interview Guide —

“It’s more so about the overall health of your landscape or the living environment that you interact with.”

—Rye Ryan

Introduction:

“Thank you for joining us today! My name is [Moderator name], and this is my classmate [Notetaker name], who will be helping me take notes today.

We are Master’s students at UW conducting research on how homeowners currently use their plantable spaces (yard, garden, etc). We are interested in learning all we can from you so please be as detailed as possible—the more detail for the answer, the better. If there are any questions that you are not comfortable answering, you are free to decline to answer them.

Before we begin, we would like to record this session and share the results with the rest of our three-member team for the purpose of our class research project. We will not share your name or any other identifying information with anyone else. We will also take care to delete any data after our research project is complete.

- Can you please confirm if it is okay that we take a recording?
- Can you please give us permission to quote any verbal statements you make during the interview?

Please know, you may withdraw your consent at any time. This could mean skipping a question, taking a break, or ending the interview early. If you end participation early, we will ask for your consent again before using any data gathered during the interview. Do you have any questions?

Again, I appreciate that you're dedicating the time and effort to our research. Let's get started.”

[Facilitator: Begin Recording]

Questions are subject to change depending on answers from Experts.

Warm Up: [15 mins]

The goal of the warm up is to get a garden tour, build rapport, establish background information and get the participant comfortable speaking.

Not all questions will be asked to all participants. Questions specific to participants who have previous knowledge will be labeled (P), and questions specific to participants with no or limited pollinator knowledge will be labeled with (NP). Unlabeled questions will be asked to everyone.

(P)= Pollinator knowledge (NP)= no or limited pollinator knowledge

To start, I'd like to learn a little bit more about you. Could you tell me a bit about yourself?

Prompt: What you do, where you're from, and your hobbies?

[If over Zoom] Can you please walk us through photographs or a video of your garden?

[If in person] Can you please give us a small tour of your garden?

Prompt: How do you normally manage it?

Prompt: Could you go through your last daily routine where you managed this space?

Who all is involved in maintaining your garden/plantable space?

What are the main things you consider when you are planning your plantable spaces?

(P) Do you do anything specifically with the idea of helping pollinators?

(P) How did you first learn about pollinators?

(P) When did you start to consider including pollinators into your plantable spaces?
And why?

(NP) What is most important to you in your outdoor/plantable space?

Activity Step 1 [10mins]

The goal of the Activity step 1 is to learn about the general process of how homeowners plan and order their yards.

Step 1: Imagine that you have a new space for planting, please think about the phases of building your garden and order them here. We've provided some examples you can use or don't have to use them. And if there are any phases that are missing, tell us and we will create a card for you. Please think out loud and explain as you're putting the cards down.

Could you tell me a bit more about why you ordered it this way?

Activity Step 2 [15mins]

The goal of the Activity Step 2 is to invite participant Look into each step from the beginning, and learn about the user's specific behaviors and tools they use in each of the planning process.

Step 2: Please look into each step, and think of what you are likely to do. Please organize which tool you might use during each step.

Questions are subject to change depending on keywords from homeowners.

To what extent do pollinators play a part in landscaping or planning of your plantable spaces?

(P) In your experience what strategies have been effective in attracting pollinators?

(P) Is there anything that hasn't worked or you wish worked better?

(NP) Is there anything you feel is missing?

Activity Step 3 [15mins]

The goal of the Activity step 3 is to learn about the user's feelings. Also, try to uncover some potential opportunities in this step.

Step 3: Please tell us which phase you enjoy the most and which phase you enjoy the least. If you can think out loud as you place the faces, that would be helpful.

What emotion are you associating with this sticker? (looking for adjectives)

Why do you feel this phase is enjoyable?

Why do you feel this phase is the least enjoyable?

What is your favorite phase?

What is your least favorite phase?

Is there a way you could improve this process?

Other questions related to Community & Neighbourhood: [5mins]

If homeowners do not mention their surrounding neighborhood as a part of their journey activity, we will ask specific questions during this section to understand if anything would change when thinking about the broader context.

When planning and maintaining your garden, how do your neighbor's space or the surrounding landscape affect your plans?

Do any outside forces affect your planning?

Do you/How do you see yourself as part of a broader landscape?

If so, how does that appear in your decision making and planning? If not, what do you need to consider that?

Wrap up / final thoughts: [5mins]

Participants can ask questions and share any other thoughts.

Is there anything else you'd like to share with us?

Do you have any questions for our research team?

Conclusion:

"Ok that wraps up our interview. Thank you so much again for taking the time to speak with us. This was extremely helpful for our understanding of what to consider as we move forward in our project."

[Facilitator: Stop Recording]

Checklist

Materials

- Some cards with different phases – based on expert’s suggestions/answers.
- Some stickers with tools they might need.
- Some sticky smiley and sad faces
- Little sticky notes for the feeling explanation (tied to the faces).

Data Synthesis —

“Let your yard be more like a meadow.”

-Demarus Tevuk

Affinity Mapping:

All data synthesis can be found at the following page:

<https://www.figma.com/file/3kIEFfPdsEtz95rPsJGO08/Research-Analysis?node-id=0%3A1>





human-computer
interaction + design