

WingTip — Fornacis

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This report documents the research goals and methodology team Fornacis will be employing to develop the WingTip birdwatching application. This app will serve as both an informative tool for birdwatchers in the field who desire an efficient means of identifying birds by sight, sound, geography, etc. and a social media platform where users can share bird sightings, photographs, events, and other bird related information. For this purpose, team Fornacis will be conducting research into stakeholders to identify features and functionality WingTip should incorporate.

KEYWORDS

bird watching; social; reference; citizen science

1. Research Questions/Goals

Our research will be targeted towards garnering insight into the following areas:

- Category 1: To understand the circumstances in which a user may interact with birdwatching applications.
- Category 2: To understand the resources most commonly referenced when engaging in bird watching activities.
- Category 3: To identify the shortcomings of existing bird watching applications and reference materials, with the goal of obtaining feedback on how these may be improved or aggregated.
- Category 4: To determine the novelty of a bird watching reference / social media platform.

2. Process

Interviews

Interviews will be conducted using a semi-structured approach, with a set of prepared question prompts used to guide and facilitate discussion. Each member of the team will separately conduct one to two interviews to allow for triangulation. The following prompts centered around the app's use-cases, functionality, and viability will be used to garner valuable insight which will be used to focus and refine WingTip's feature-set and layout.

- How often do you engage in bird watching, either intentionally or unintentionally?
- What resources do you take with you when you go birdwatching?
- How do you decide where/when to go birdwatching?
- If you see a bird you do not recognize, how do you go about identifying it?
- What is your primary resource for learning about species of birds in your area?
- If there have been species you were not able to identify, what was the difficulty you encountered?
- If you had an app for identifying unknown birds, what would be the first piece of information you would want to reference?
- In what situations (outdoors, at home, etc...) do you find yourself seeing birds or wanting to reference information about birds?
- Do you participate in any online bird watching communities?

- What platforms do you currently use to interact with and communicate with other birdwatchers
- <https://www.reddit.com/r/birding/>
- What is your motivation behind birdwatching? (academics, hobby, interest, other)

Interview 1:

Due to limitations resulting from the COVID-19 pandemic, the interview was conducted over the phone. The interviewee was located in his living room at home. The interview was conducted at about 6pm on a Wednesday. The questions asked were:

- How often do you engage in bird watching?
- When you see a bird do you try to identify what species it is?
- What kind of resources do you use to determine the species?
- Have you ever come across a species that you weren't able to identify?
- Do you ever go to any alternative destinations for bird watching?
- Do you ever utilize any online bird watching resources or communities?
- If there were an app available for your phone that could identify a bird for you, would that interest you?

Interview 2:

As with other interviews, the COVID-19 pandemic limited the interview to an online voice chat over the service Discord. The interviewee was a 21-year-old business student residing in Eugene, Oregon. The interview began at 3:15pm on a Thursday and lasted approximately 30 minutes. The interviewee reported playing with a balisong knife (commonly referred to as a "butterfly knife") as that is a typical activity he engages in during casual conversation. The following questions were asked, with unstructured follow-up as necessary:

- How often do you engage in birdwatching?
- What resources do you take with you when you go birdwatching?
- How do you decide when or where to go birdwatching?
- When you see a bird you don't immediately recognize, how do you try to figure out what you're looking at?
- What is your primary place for learning about species in your area?
- If there have been species you were not able to identify, what was the problem you came across in identifying them?
- If you had a dedicated app for identifying birds, what would be the first piece of information you would want to reference?
- In what contexts do you typically come across birds?
- Do you participate in any bird watching communities? If so, which ones?
- What is your motivation behind bird watching?
- If you had an app for identifying birds, what features would you like to see?

Interview 3:

Since we are still dealing with the COVID-19 pandemic, the interview was done over the phone. The interviewee is a 64 year old retired music teacher, residing on Long Island, NY. The interviewee was in their kitchen sitting at their kitchen table. The interview was conducted at 3pm on a Friday. The questions asked were:

- Before we begin, would you be alright with me recording this conversation?
- How often do you engage in bird watching?
- What resources do you take with you when you watch birds?
- How do you decide where and when to go birdwatching?
- How do you go about identifying a bird?
- If there have been species you were not able to identify, what was the difficulty you encountered?
- If you had an app for identifying unknown birds, what would be the information you would want to reference?
- Do you participate in any online bird watching communities?
- What is your motivation behind birdwatching?

- If you had an app for birdwatching, what features would you like to see on it?

Interview 4:

Because of the COVID-19 pandemic, my interview was conducted over the phone. The interviewee is a physician who lives in Omaha, NE. Interviewee was located in their kitchen during the call. The interview took place at 5 P.M on a Tuesday.

- How often do you engage in bird watching?
- What do you take with you when you go birdwatching?
- How do you decide where/when to go birdwatching?
- If you see a bird you do not recognize, how do you go about identifying it?
- What is your primary resource for learning about species of birds?
- If there have been species you were not able to identify, what was the difficulty you encountered?
- If you had an app for identifying unknown birds, what information would you be most interested in about an unknown species?
- Do you participate in any online bird watching communities?
- What is your motivation behind birdwatching? (academics, hobby, interest, other)

Interview 5:

This interview was conducted in-person. The interviewee is a young adult living in Corvallis, OR for university. The interview took place in their apartment's common-area, at 1:30 PM Saturday. Questions asked were the following, including unstructured discussion and follow up.

- How often do you engage in bird watching?
- What do you take with you when you go birdwatching?
- How do you decide where/when to go birdwatching?
- If you see a bird you do not recognize, how do you go about identifying it?
- What is your primary resource for learning about species of birds?
- If there have been species you were not able to identify, what was the difficulty you encountered?
- If you had an app for identifying unknown birds, what information would you be most interested in about an unknown species?
- Do you participate in any online bird watching communities?
- What is your motivation behind birdwatching? (academics, hobby, interest, other)

Interview 6:

The interviewee is a graphic designer living in Corvallis, OR. The Interview was conducted at 12:00 PM Saturday, in-person. The interview took place in their apartment's common-area. The following questions were asked, including unstructured discussion and follow up.

- How often do you engage in bird watching?
- What do you take with you when you go birdwatching?
- How do you decide where/when to go birdwatching?
- If you see a bird you do not recognize, how do you go about identifying it?
- What is your primary resource for learning about species of birds?
- If there have been species you were not able to identify, what was the difficulty you encountered?
- If you had an app for identifying unknown birds, what information would you be most interested in about an unknown species?
- Do you participate in any online bird watching communities?
- What is your motivation behind birdwatching? (academics, hobby, interest, other)

Surveys

Online surveys will also be distributed among birdwatching forums and communities. The same questions will be tailored to the survey format which will require voluntary participation. Participants will be able to provide short answer responses to the questions in a similar way to the interviews. Fornacis anticipates that the majority of insight from experienced birdwatchers will be sourced through online communities due to the safety hazards of in-person data collection at this time. The following online communities will be contacted for survey data:

- Reddit - <https://www.reddit.com/r/birding/>
- BirdForum - <https://www.birdforum.net/>
- Audubon Society - <https://audubonportland.org/go-outside/destinations/>
- BirdPhotographers - <http://www.birdphotographers.net/forums/forum.php>

3. Inventory

The People in the Space

3.1 Who Are They and What Are They Like

Interview 1:

He is a 69 year old retiree. His wife was also in the house, but left the room during the interview.

Interview 2:

He is a 21-year-old college student, studying for an undergraduate business degree. He was alone in his room.

Interview 3:

She is a 64 year old retiree. She is single and lives with her two dogs.

Interview 4:

She is a 45 year old physician. She is married and her husband was also in the house.

Interview 5:

She is a 22 year old college student, studying computer science.

Interview 6:

She is a 21 year old graphic designer pursuing a computer science degree.

3.2 What Are They Doing

Interview 1:

He is watching the news in his living room at home.

Interview 2:

He is sitting on his bed and passively playing with a balisong knife, also known as a butterfly knife. His focus was primarily given to the interview being conducted.

Interview 3:

She is brewing coffee and then drinking it at the kitchen table.

Interview 4:

Currently she is sitting in her kitchen preparing food.

Interview 5:

She was sitting at her desk watching Youtube.

Interview 6:

She was sitting at her desk playing Animal Crossing on a Nintendo Switch.

3.3 How Are They Doing It

Interview 1:

He was sitting on the couch watching the television.

Interview 2:

He was relaxed, and spoke with a casual tone of voice. He did not provide any indication of nervousness or shyness about being interviewed.

Interview 3:

She is relaxed talking on speaker phone as she sips her coffee.

Interview 4:

She is friendly and relaxed, was not nervous at all.

Interview 5:

She is calm and casual, no indication of discomfort.

Interview 6:

She is friendly and talkative, no indication of discomfort.

3.4 What Do Their Emotions, Purposes, Reactions Seem To Be, and What Did They Say**Interview 1:**

He was very casual about the interview. He expressed interest in the idea for the application, but also reiterated a few times that he is not a professional bird watcher and mainly enjoys the hobby in a passive manner.

Interview 2:

The interviewee did not provide any indication of discomfort. He did not seem to be particularly interested in bird watching as a hobby, but was able to answer the questions regardless.

Interview 3:

She seemed very happy to talk about birdwatching, she fondly spoke about walking her dogs and enjoyed admiring the birds. She said that she wasn't the best with her phone but was intrigued with the application.

Interview 4:

The interview was casual to her, she seemed to be interested in the application. She enjoys birdwatching as a hobby and would likely be a user of the application, to view other birdwatching locations and images.

Interview 5:

The interview was low-stakes and casual. She seemed to enjoy the social interaction and break in schoolwork. She is a casual birdwatcher and expressed some inadequacy as an interviewee given her casual/infrequent birdwatching.

Interview 6:

She enjoyed the discussion and expressed enthusiasm in birdwatching despite being a casual birdwatcher. She treats bird watching as a pastime, and has a bird feeder outside her window which she enjoys observing.

3.5 What Problems Do They Encounter With Their Activities**Interview 1:**

He did not encounter any problems during the interview.

Interview 2:

He did not have any difficulty during the interview. There were no problems with voice-chat working and we were able to communicate without issue.

Interview 3:

She didn't have any problems with the interview.

Interview 4:

No issues with the phone interview.

Interview 5:

The interview was quick and seamless.

Interview 6:

The interview was quick and seamless.

The Objects in the Space and with the People

3.6 What Are the Functional Elements of the Objects

Interview 1:

The television is used for watching satellite TV and streaming services. The couch is used for seating.

Interview 2:

As the interviewee was in his bedroom, the objects were used for their traditional purposes. The bed was for sleeping or sitting on, and bookshelves held books.

Interview 3:

Since she was in the kitchen, the kitchen table was used for eating and drinking at. The refrigerator was meant for cold storage of food. The oven/stove is meant for cooking

Interview 4:

She was in her kitchen, all items in the kitchen were used for their traditional purposes. Table and chairs for sitting at while eating, refrigerator for storage, and oven/stove for cooking the food.

Interview 5:

She was in the common area, surrounded by the desks of her housemates who were studying. She was occasionally glancing at her computer screen.

Interview 6:

She was in the living room, surrounded by desks and chairs. She was playing her Nintendo Switch at the time as well.

3.7 What Are the Decorational Elements

Interview 1:

There are paintings on the walls and various knick-knacks on shelves.

Interview 2:

His room is typical of a college student. There are some posters of bands on the walls and some pieces of small furniture in the room. He describes it as "messy," with "shoes on the floor and things strewn on the desk."

Interview 3:

There are paintings on the walls and pictures of family and friends on the refrigerator.

Interview 4:

The kitchen is not overly decorated, a lot of pictures of family and friends on the fridge. There were also many holiday cards held up on the fridge as well.

Interview 5:

There are posters on the walls and lots of pictures.

Interview 6:

She has lots of art on and around her desk, along with artworks created by herself. Various knick knacks and trinkets also adorn her appliances.

3.8 Which Objects Do People Look For

Interview 1:

The interviewee was focused on the interview and so was not looking for anything.

Interview 2:

The interview subject was not distracted by anything. His focus was on the interview at hand, but he did take a short break to use the restroom.

Interview 3:

The interviewee was not distracted and she was focused on the interview.

Interview 4:

The interview was focused on the interview for the most part, was focused on food preparation when not focusing on the interview.

Interview 5:

The subject was mostly focused on the interview, occasionally glancing at her computer screen.

Interview 6:

The interviewee shifted her attention between the interview during questions and back to her Nintendo Switch when answering them.

3.9 Which Objects Do People Bring With Them That Matter to the Activities

Interview 1:

He brought his phone to use for the interview.

Interview 2:

The interviewee needed only his iPhone and airpods to engage in the interview.

Interview 3:

She usually just had her purse, phone and leash for her dogs.

Interview 4:

Interviewee only needed their cell phone for the interview to take place.

Interview 5:

The subject was seated in a chair.

Interview 6:

Interviewee was seated in a chair, playing with a Nintendo Switch.

The Environment

3.10 What is the Layout

Interview 1:

It is a living room with a television, a couch along one wall, a bookcase on the opposite wall, and a rocking chair and end table in the center of the room. The back of the room is open to the kitchen and there are two doorways on opposite walls at the other end of the room.

Interview 2:

Please note this description is based on reports from the interviewee as the interviewer was not able to conduct the interview in person. The interviewee was in his room, sitting on a full-size bed against one wall. Opposite the bed was a medium sized window which afforded a view of a small alleyway and a house across said alleyway. The room also contained a small bookcase and desk.

Interview 3:

It is a kitchen with a small kitsch table that could sit maximum four people. Across from the kitchen table is a sink, to the left of that is a dishwasher and left to that is a refrigerator. To the right of the sink is cabinet space then next to that is an oven/stove.

Interview 4:

The layout is a kitchen with a countertop-island in the middle of the room, with barstools at the island, and appliances across from the island on one side, the kitchen table and chairs were laid out on the other side of the room.

Interview 5:

The layout is a shared common-area split amongst her housemates; Each housemates desk occupies a different corner of the room, with a center area for socializing. The open-concept area opens into a kitchen with a hallway leading to the remaining rooms.

Interview 6:

The interview environment is a living room which has been renovated to accommodate the workspaces for each of her housemates. There are large windows facing the street. The floors are carpeted and there is a small coffee table in the middle of the room with a television and video games console on it.

3.11 What is the Environment Like

Interview 1:

It is the interviewee's living room at home, where he spends a lot of his time.

Interview 2:

The interviewee's bedroom is a place he goes to relax and, like most bedrooms, is a private space where he feels secure. It was clear that he did not feel on-edge or antsy as can be possible in more formalized interview settings.

Interview 3:

The interview is in a kitchen where she enjoys to spend time at.

Interview 4:

The interview took place in the kitchen where her and her husband spend a lot of time cooking and conversing.

Interview 5:

The environment is warm with lots of natural sunlight. It serves as both a workspace and common-area for socializing. The interviewee notes the majority of her day is spent between this area and the kitchen.

Interview 6:

The interview environment is warm and well-lit. Her housemates are seated at their desks working on various school assignments while she sits facing away from her desk playing her Nintendo Switch. The floors are carpeted and the sounds of an electric kettle can be heard from the kitchen. The area serves primarily as a workspace.

3.12 How Does It Influence the Activities**Interview 1:**

Though the television is on, the interviewee remains focused on the interview. He is relaxed.

Interview 2:

I did not notice the interviewee being distracted by the environment. However, through playing with his balisong knife, I did hear some faint clicking in the background from metal parts moving around, but I didn't notice this detracting from his intention when answering questions at all.

Interview 3:

She seemed very comfortable and relaxed, she was not distracted.

Interview 4:

Interviewee was comfortable in her kitchen, as this is a place she was very familiar with.

Interview 5:

The interviewee was relaxed and comfortable in the space.

Interview 6:

The interview subject was shifting focus between the interviewer and her Nintendo Switch. However, she was answering questions in complete sentences and providing follow up and insight.

3.13 How Does the Environment Support the Objects Above**Interview 1:**

The seating is arranged to allow people to easily converse or view the television. It also gave the interviewee a comfortable place from which to answer questions.

Interview 2:

None of the above objects directly support the act of birdwatching, as the interviewee indicated this is not an activity he typically participates in while in that space. Unfortunately, this is a limitation imposed by the COVID-19 pandemic.

Interview 3:

The kitchen is arranged to easily cook and eat. She mentions that this is where she looks into her backyard. She laughs and says she can birdwatch drinking coffee from her kitchen.

Interview 4:

Kitchen is not a supporting environment for her birdwatching, she typically leaves the house to bird watch.

Interview 5:

From the common area she can occasionally observe birds out the window. However, her primary means of birdwatching are from hiking and outdoor activities.

Interview 6:

From her desk, she can observe a birdfeeder placed outside her window. This enables her to birdwatch while performing other activities related to her work.

4. Interview Responses

Interview 1:

- Q: Do you mind if I record?
 - A: Ah, you're going to record me, huh? No, go ahead, I don't care.
- Q: So, to start: how often do you engage in bird watching?
 - A: [Pause] Well, [Pause] sometimes it's daily. I've got bird feeders outside my window, so I kind of watch them every day a little bit.
- Q: [Pause] Mhm, and when you see a bird, do you try to identify what species it is?
 - A: If I see one that I'm not familiar with, I do try to get an idea of what kind of species it is, but it seems like most of the time, they're the same ones, so--but every once in awhile I'll see one that I don't recognize and I'll try to figure out what it is.
- Q: And what kind of resources do you use to determine the species?
 - A: Mostly, I've got... [Pause] Mostly, I've got a few books around here that have the birds listed in it.
- Q [Pause] Okay, and have you ever come across a species that you weren't able to identify?
 - A: [Pause] I have, yes, I guess. I wouldn't - There are some of these species that are so close to each other, you know, that it's hard to distinguish. Just like I pick up this book here and I open it up and it says "woodpeckers" and several of them have the same markings except one of them might have just a little bit of different--just a shade different, so without being a professional bird watcher, sometimes it's difficult.
- Q: [Pause] Okay, and [Pause] do you ever go to any alternative destinations for bird watching?
 - A: [Pause] No.
- Q: Okay, what about any sort of online bird watching resources or communities. Do you ever utilize anything like that?
 - A: I do not, because like I say, I'm a casual bird watcher, not one that's serious. I like watching them and feeding them, but I don't go to the extreme of researching a lot of them.
- Q: [Pause] Mhm, and if there was something available, say an app on your phone, that would just automatically identify a bird for you if you either took a picture of it or recorded its call or something like that, would that be something that would interest you?
 - A: Well, [Pause] being casual--I mean, it would be helpful, but I can see where--there's a lot of bird watchers out there--and I could see where a lot of people would make use of that.

Interview 2:

- Q: Before we begin, would you be alright with me creating an audio recording of this conversation?
 - A: I would prefer not, if that's alright
- Q: How often do you engage in bird watching, either intentionally or unintentionally?
 - A: It's not something I do very often, usually only when I see birds doing something out of the ordinary. Like if they're in a large flock, or if there's a crow carrying something strange, something like that.
- Q: How often would you say that happens?
 - A: About biweekly, maybe a little less often.
- Q: What resources do you take with you when you watch birds?
 - A: It's not something I seek out so I usually just have my phone with me. Google is where I go to answer any questions that I may have.
- Q: How do you decide where and when to go birdwatching?

- A: I don't decide to, it's kind of just something that happens when I'm out and about. It's a spontaneous thing, when I do it.
- Q: If you see a bird you don't recognize, how do you go about identifying it?
 - A: I would say the first thing I notice is color. Like if a bird is black I can probably assume it's a crow, and a blue one is a bluebird, you get the idea. After that it's either the size or pattern on the feathers, when I can make that out. I also sometimes look at things like beak shape or how fast it's flying. I don't know, I guess I just look at lists of birds in the area and just go down the list until I see what I saw.
- Q: What is your primary resource for learning about species of birds in your area?
 - A: It's usually Wikipedia, there's like a page for birds of Oregon or something like that.
- Q: Do you seek out Wikipedia specifically, or is that just a byproduct of it being a top search result on Google?
 - A: I look for it specifically.
- Q: Are there any other sites?
 - A: Sometimes the Oregon Department of Fish and Wildlife site, but not very often.
- Q: If there have been species you were not able to identify, what was the difficulty you encountered?
 - A: Well sometimes there are species that look really similar to each other. There are lots of birds that are just brown, and it's hard to look that up. I guess with something like that I have to resort to their call, which can be difficult to put into words so that's hard too.
- Q: If you had an app for identifying unknown birds, what would be the first piece of information you would want to reference?
 - A: First would probably be color and patterns since that is the most immediately obvious.
- Q: In what situations do you find yourself seeing birds or wanting to reference information about birds?
 - A: It's usually when I'm outside, like if I'm biking or something. There was also a time where I was tubing down a river and saw something I thought might be a heron but I couldn't tell for sure. It's not something I would stop for unless the bird is really unique, or something.
- Q: Do you participate in any online bird watching communities?
 - A: No.
- Q: What is your motivation behind birdwatching?
 - A: I don't know, I just think they're neat, I don't have a deep interest in birdwatching or anything. I mean, they might be fake [laughs].
- Q: Alright, we've gotten past all the points I need to hit. If you had an app specifically for birdwatching, what kind of features would you like to see on it?
 - A: I think introducing a game or competitive aspect would be cool, like if you could build a profile with all the birds you've spotted and gotten a clean picture of. Imagine there was, like, a moderator that you could submit pictures to and he would go 'okay you get this badge' or 'sorry, you got that picture from Google,' that would be cool.
- Q: Is there anything else you'd like to add?
 - A: Nope, I think that covers it all.

Interview 3:

- Q: Before we begin, would you be alright with me recording this conversation?
 - A: No, I would rather not.
- Q: How often do you engage in bird watching?
 - A: A few times a week. Just as I am out and about. Usually just unintentionally if I am out either walking my dogs or shopping.

- Q: What resources do you take with you when you watch birds?
 - A: I never go out to look at birds per say, but if i see something, I use my phone to search the internet and google a description of the bird. I have been using <https://www.audubon.org/bird-guide> they have a lot of resources. I look at the mid atlantic area, you know because I currently live in New York.
- Q: How do you decide where and when to go birdwatching?
 - A: I don't actively seek it out, but usually as I am either walking, hiking, or taking my dogs out I try to notice birds around me. I am constantly looking up and at trees. I have two dogs, so I love taking them on long walks at parks so if I see a bird I am not sure of it, then I usually try to figure it out
- Q: How do you go about identifying a bird?
 - A: The first thing I would do is mimic the bird sound and then take notice of the color and the region I currently am in.
- Q: If there have been species you were not able to identify, what was the difficulty you encountered?
 - A: One time I had trouble figuring out this small bright yellow bird, I thought it was a canary at first but later learned it was "American Goldfinch " with yellow color with a dark brown around its eyes.
- Q: If you had an app for identifying unknown birds, what would be the information you would want to reference?
 - A: Bird songs, I love to try to mimic bird songs and sing with them. Then maybe color and size.
- Q: Do you participate in any online bird watching communities?
 - A: No.
- Q: What is your motivation behind birdwatching?
 - A: Ever since I was I child I have enjoyed looking and learning about birds. Since I was a kid I would always try to mimic the songs of birds. I am a retired music teacher so I love singing with birds.
- Q: If you had an app for birdwatching, what features would you like to see on it?
 - A: I would like to see an app that makes it easy to not only visually compare the birds but also plays bird songs.

Interview 4:

- Q: Are you alright with me recording this conversation?
 - A: I would prefer it if it wasn't recorded.
- Q: How often do you engage in bird watching?
 - A: Once a week in summer and fall, once a month in winter
- Q: What do you take with you when you go birdwatching?
 - A: I usually bring a pair of binoculars, a camera, and my smartphone.
- Q: How do you decide where/when to go birdwatching?
 - A: I base where I go birdwatching on the season, current bird populations reported , and how far I am willing to travel
- Q: If you see a bird you do not recognize, how do you go about identifying it?
 - A: When I see a bird that I do not recognize I take a picture and look through books, or I google the description.
- Q: What is your primary resource for learning about species of birds?
 - A: The resources that I use the most are books and other online resources
- Q: If there have been species you were not able to identify, what was the difficulty you encountered?
 - A: My biggest challenges usually arise when I am not able to get a picture as I may forget key details when trying to reference and query resources later in the day when I get back home and am able to look through a book or look online.
- Q: If you had an app for identifying unknown birds, what information would you be most interested in about an unknown species?

- A: I would like to know species names, key/defining characteristics about bird species, as well as their migration patterns
- Q: Do you participate in any online bird watching communities?
 - A: No I am not active in any communities
- Q: What is your motivation behind birdwatching? (academics, hobby, interest, other)
 - A: I basically only bird watch as a hobby

Interview 5:

- Q: How often do you engage in bird watching, either intentionally or unintentionally?
 - A: Only sometimes unintentionally if I happen to be looking out the window.
- Q: What resources do you take with you when you go birdwatching?
 - A: Most likely on a walk, I would take my phone for music/if I wanna take pictures.
- Q: How do you decide where/when to go birdwatching?
 - A: I don't intentionally go birdwatching.
- Q: When you see a bird you don't immediately recognize, how do you try to figure out what you're looking at?
 - A: I would take a photo of it and look up photos to cross reference.
- Q: What is your primary resource for learning about species of birds in your area?
 - A: Google.
- Q: If there have been species you were not able to identify, what was the difficulty you encountered?
 - A: There are a lot of bird pictures and I'm not an expert, so cross referencing images is really hard.
- Q: If you had an app for identifying unknown birds, what would be the first piece of information you would want to reference?
 - A: Probably something visual.
- Q: In what situations (outdoors, at home, etc...) do you find yourself seeing birds or wanting to reference information about birds?
 - A: There is a new bird feeder in front of my house, and I'd probably want to know more about their species and what they eat.
- Q: Do you participate in any bird watching communities? If so, which ones?
 - A: No.
- Q: What is your motivation behind bird watching?
 - A: It just happens sometimes. It's never intentional.

Interview 6:

- Q: How would you describe yourself as a bird watcher?
 - A: Well when I see cute birds, I like to pay attention to their patterns.
- Q: How often do you engage in bird watching, either intentionally or unintentionally?
 - A: I'd say it's about once a day on average.
- Q: What resources do you take with you when you go birdwatching?
 - A: Just me and maybe my phone to take pictures.
- Q: How do you decide where/when to go birdwatching?
 - A: I let my schedule dictate the birdwatching.
- Q: If you see a bird you do not recognize, how do you go about identifying it?
 - A: Well I take a picture, and then I use that picture as a resource later to look it up. I would probably take keywords about the picture and what I see, like color, pattern using a search engine.
- Q: What is your primary resource for learning about species of birds in your area?
 - A: Google.
- Q: If there have been species you were not able to identify, what was the difficulty you encountered?
 - A: Too far away, and flying too fast, and maybe not being able to describe the bird well.

- Q: If you had an app for identifying unknown birds, what would be the first piece of information you would want to reference?
 - A: Probably either a set of-- fill in a set of questions, or maybe submit your photo and it analyses it.
- Q: In what situations (outdoors, at home, etc...) do you find yourself seeing birds or wanting to reference information about birds?
 - A: Well when I'm sitting at my desk, a lot of birds come to the window, and I think "hmm I wonder what bird that is?"
- Q: Do you participate in any bird watching communities? If so, which ones?
 - A: Unfortunately no.
- Q: What is your motivation behind bird watching?
 - A: I just think they're neat!

5. Insights

Interview 1:

This interview revealed that the bird identifying features of our applications could be useful or interesting for casual/passive bird watchers like the interviewee who may see a bird that they would like to identify easily. However, for those who do not focus on bird watching as a hobby, they may be less likely to be interested in the map and location-based features of the application, as well as the social features. After the recorded interview, the interviewee stated that he has a cousin who is a bird watcher and travels around the world trying to find birds on her checklist. This could make for an interesting additional feature for avid bird watchers.

Interview 2:

This interview revealed that this interface needs to cater to casual users, and needs to be easily navigable in cases where the users wants to quickly reference information. There are many cases in which my interviewee indicated that he would not be willing to delve into lengthy bits of information about a species. Rather, we should think primarily about the most commonly-used pieces of information and make this the most easily-accessible pieces of information about any given species. For example, information about color and size will be needed more often than more obscure information, such as beak shape. The majority of people wanting to use this type of service don't have optical equipment appropriate for identifying such characteristics on a species. In summary, the most commonly referenced pieces of information, such as size and color, should take the least amount of effort to obtain.

Interview 3:

This interview showed how important bird songs and sounds are to casual users. This application should have the ability to reference different birds with color, size, region, beak size and also by the sound the bird makes. Maybe it should have the ability to identify the bird only on the recording of the bird sounds. For casual users this interview shows the importance of reference based on color, size and sound. The casual user may find it interesting to see images and sounds captured by other users in similar areas. This interviewee showed me how important bird sounds are to casual users. There should be a simple way to listen to bird sounds on the application and also capture bird sounds to upload to the application.

Interview 4:

The interview gave me a lot of information and insight into what a lot of people are looking for out of a birdwatching application. The application should be easy to use, as well as have distinct characteristics about each species that are essential to help identify and distinguish one species of bird from another. A central location with images, descriptions, and migration information could greatly aid hobbyist and enthusiast birdwatchers. Something that my interviewee suggested was

the idea to have sound samples and other information such as plant species that could help users track and find certain species of birds based on the noises they make as well as plants that tend to attract birds and other wildlife.

Interview 5:

This interviewer represents a large portion of the potential user base for our application: Casual users who take opportunistic moments to learn more about bird species they encounter. The interviewee mentioned they prefer visual based information for identifying bird species, so our app should be feature-rich in visual analysis systems and visual-based interfaces for searching through different birds. She also mentioned that cross referencing bird images becomes challenging when there are lots of potential candidates, so the ability to automate the process of bird identification would be crucial to this app’s viability for the casual birdwatcher.

Interview 6:

The interviewee expressed how they tend to encounter birds in casual situations and would have their mobile phone available to take pictures. One of our concerns with this app is that mobile phone’s have a harder time capturing detailed images of birds, which might cause issues for an automated bird identification system. That said, this interview has raised my confidence in such a system’s viability, as a lot of potential users would be in situations similar to the interviewee’s, that being one where the birds are nearby and stagnate when eating from a bird feeder or perched on a tree branch.

Peer Evaluation

| Member Name | Role | Responsibilities / Assigned Task | Task Completion Grade (0-5) |
|------------------|---------------------------------|----------------------------------|-----------------------------|
| Ethan Hirsch | User Research and Communication | Interview 5/6 | 5 |
| Joseph Tong | Writing/Deliverables | Interview 1 | 5 |
| Kyle Folk-Freund | Visual Design/UX Design | Interview 3 | 5 |
| Nicholas Minton | Visual Design/UX Design | Interview 4 | 5 |
| Wyatt Whiting | Leader/Manager | Interview 2 | 5 |