Wingtip - Fornacis

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WingTip seeks to provide a platform for both novice and experienced bird watchers to learn, collaborate, and share information relating to the bird watching hobby. In this paper, we will outline the methods we intended to use for carrying out analytical and empirical evaluations. We will combine our previous paper concepts in a single design in order to facilitate consistency between evaluations.

KEYWORDS

social media; bird watching; reference; citizen science; analytical; heuristic; Nielsen; empirical; evaluation

1. Introduction

To move forward with the development of our birdwatching app, WingTip, Team Fornacis will evaluate the usability of the app by performing four evaluations, two analytical evaluations, and two empirical evaluations. The analytical evaluations will be done by two team members; who will then analyze various screens from the prototype. The team members will use heuristic evaluation and Nielsen Heuristics techniques to analyze the WingTip prototype. Then the two team members will step through multiple tasks using the prototype, to see if these steps are logical. The analytical evaluation may allow us to discover design issues in our prototype and may reveal bugs/issues with user experience. The empirical evaluations will be conducted on a set of two potential users, each user will get the opportunity to walk through the prototype with our team members. The team member will manually change screens based on desired input of the user. The team will use these insights from the empirical evaluations to gather a better understanding of the user experience as well as any design issues. Once all data from the evaluations are collected, it will be used and incorporated into the app. The data will be used to improve the functionality, workflow, and usability of the WingTip prototype.

2. Analytical Evaluation

We will use a low fidelity prototype created from the consolidation of our three initial concepts for the WingTip app. Two members of the team, Joseph Tong and Kyle Folk-Freund, will analyze the various screens in the prototype identifying any usability issues they may see. These team members are familiar with the heuristic evaluation process as laid out here, as well as the Nielsen Heuristics, which will be used to guide the evaluation. This evaluation will allow our team to make improvements to the design before moving on to creating the fully interactive prototype.

In addition to analyzing the individual screens, the two evaluators will attempt to step through three tasks using the prototype. This process will allow us to examine whether the steps required to complete some of the primary tasks enabled by the app are logical and easily identified. The tasks will be performed in a different order by each of the evaluators in case the order in which the tasks are done may hide or reveal problems with the user experience. These tasks will be:

- View the profile of the user at the top of the state leaderboard.
    - Why this task: users may want to view images and videos uploaded by the top birdwatchers in their area or even message them for advice about birdwatching.

- Find out when purple finches are active.
    - Why this task: users may have a bird species that they particularly want to see in the wild so it would be useful to know what time of day they are most likely to be spotted.
- View the details of a local bird sighting.
    - Why this task: users may want to see if a species of particular interest to them has recently been spotted in their area.

While analyzing the screens and performing the tasks, the evaluators will answer the following questions associated with each of the Nielsen Heuristics:

1. Visibility of system status
    a. When the system is performing a task that the user must wait on, does it inform the user of what is happening?
    b. When the system is
2. Match between the system and the real world
    a. Does the system use only words and symbols that are easily understood by the lay-person?
3. User control and freedom
    a. Does the system allow the user to easily back-track on screens or cancel actions?
4. Consistency and standards
    a. Are words and symbols used for a given purpose the same on every page within the system?
    b. Are words and symbols used for purposes common to other applications similar enough to be easily recognizable?
5. Error prevention
    a. Is it possible or likely for the system to allow the user to enter an error state?
6. Recognition rather than recall
    a. Can the user easily navigate to all of the apps features without having to remember long paths of screens and button taps?
    b. Is all of the information the user needs to perform a task on a given screen immediately available?
7. Flexibility and efficiency of use
    a. Are closely related features linked so that the user can easily transfer information from one to the other where appropriate without backtracking and re-entering the information?
8. Aesthetic and minimalist design
    a. Is relevant information easy to locate on each page?
    b. Is only relevant information displayed on each page?
9. Help users recognize, diagnose, and recover from errors
    a. If an error message is displayed, is it easily understood by the lay-person?
    b. Can the user easily return the system to the state it was in before the error occurred?
10. Help and documentation
    a. Can the user quickly obtain help documentation related to the feature they are currently interacting with?

When the evaluators find an instance in which any of the above questions can be answered in the negative, they will document the problem as well as where and how often it occurred. Once both evaluations have been completed, the team will work as a group to assess the severity of each problem according to their frequency and impact on the user experience. This assessment will allow us to prioritize fixing the most severe issues first, before work begins on the interactive prototype.

3. Empirical Evaluation

Our team will carry out a set of empirical evaluations with potential users in order to generate insight on the usability of our design. With these evaluations, we hope to gain information on

whether a number of tasks are easy to intuit. We hope the app will appeal to both experienced bird watchers as well as those who have only a passing interest in the hobby, or are just beginning. In essence, we want this to be a proverbial “One Stop Shop” for bird watching.

During the interview, we will have the interviewee mimic using the app while presenting each screen in succession, manually changing the screens as the prototype does not work on its own yet. Data from the interviews will assist our team in tweaking design elements for the purpose of making the app easier to use without the need for training or tutorials.

The first interviewee will be a 21-year-old male college student. He is highly active on social media sites and has a strong understanding of how to operate and navigate mobile apps. He has expressed interest in the bird watching hobby, but does not actively participate in it. We believe he will be a good candidate for the interview as he fits into a target demographic we care about -- namely, people who may be interested in bird watching but do not have a platform they currently use or are loyal to. This data will be valuable as it will help us understand what aspects of our interface design might cause potential friction and discourage a new user from returning.

The second interviewee for our empirical evaluation will be a female medical school student in her mid 20s. She will be a valuable target for our evaluation because she fits into one of our target demographics as an amateur bird watcher. She currently is not using any bird-focused application or social media to aid and improve her bird watching experience. She is competent with technology and would most like to use the application as a way to share bird-focused photography. This evaluation will be essential as it will give us insight into the usability of the community feed, the ability to post and interact with photos, and the effectiveness of a leaderboard for driving user-engagement.

The empirical evaluation will consist of virtual copies of the medium-fidelity prototypes presented to the interviewee. This will allow the user to experience the fundamental aspects of the design while simultaneously allowing us designers a high degree of flexibility in editing our designs using the feedback we receive. The interviewee will not receive any training or direction on the functionality of the app before the evaluation as to prevent biases from entering the data. We want the interviewee to experience the interface as if there were no interviewer at all.

After the task description has been explained to the user and any preliminary questions have been answered, the evaluation will begin. No assistance will be provided by the interviewer to the interviewee during the core of the evaluation, other than indicating whether certain actions can not be completed (for example, tapping on a button for which no prototype has been developed yet).

The interviewer will take notes of the interviewee’s comments and workflow before, during, and after the core of the evaluation. Due to the COVID-19 pandemic, face-to-face evaluations are not feasible, so we will not be able to have a video recording of the user interacting with the prototype. Interviewees will be encouraged to verbalize their thoughts to the interviewer so the interviewee may take notes as needed. The interviewer will additionally indicate whether the interviewee was able to complete the tasks, and take note of any roadblocks the interviewee encountered when trying to accomplish the tasks set before them.

Task Description

The WingTip app is a tool that is intended to serve as a platform for bird watching enthusiasts to communicate and share information/photos with one another, as well as serving as a reference tool for the multitude of bird species one may encounter. You will be asked to simulate using this app as a first time user. Assume for the sake of this experience that you have already downloaded the app to your phone and are opening it for the first time. Please “think out loud” to the best of your ability. If you are confused about a particular design element, say so out loud so that we may record your thoughts. You are welcome to interact with the elements, whether that be tapping, clicking, dragging, etc… The evaluator will simulate the app’s interactions by swapping out still images as appropriate.

1. From the welcome screen, create a new account
2. Use the search feature to locate a “purple finch”
3. Find the most recent bird sighting in your local area
4. View your own profile
5. On the daily challenge, view the profile of the first-place user.

Interview and User Interaction

Here you can find the set of follow-up questions we will ask users after running through the tasks listed above. We will also ask follow-up questions to these follow-up questions as necessary, and as appropriate based on the test subject's responses.

1. What are your general thoughts about the workflow of these tasks?
2. What difficulties did you encounter when trying to accomplish these tasks?
3. For any difficulties you faced, what was your initial instinct?
4. How difficult was searching for the "purple finch?"
5. How difficult was creating a new account?
6. How difficult was locating recent sightings in your area?
7. How difficult was locating your own profile?
8. What information were you expecting to find in the Wiki page that wasn't there?
9. What were your broad thoughts on the app's navigation?
10. Did you find any feature particularly easy to understand?
    a. If so, do you know why?
11. If you could design this app, what are 2 things you would change immediately?
12. Do you have any final thoughts or comments?

The prototype used in this assessment can be found at the end of this document, before team member evaluations. Since in-person meetings are intractable due to the COVID-19 pandemic, these will be presented to the test subject via fullscreen screen sharing on an online messaging platform. The presenter will swap out images as appropriate as the test subject navigates through the screens.

The following list describes the navigation flow of the prototype. Numbers correspond to the image captions found at the end of this document.

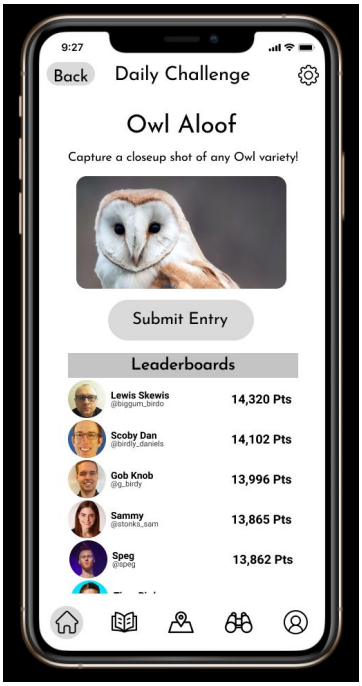
- Screen #1 is presented when the app is first opened
    - The "Login" button leads to screen #2
    - The "Sign up" button leads to screen #3
- Both screen #2 and screen #3 lead to screen #4 after completing the forms
- The "Daily Challenge" tile on screen #4 leads to screen #5
- The first place user on the leaderboard shown on screen #5 brings the user to see screen #6
- The book icon presented on any screen brings the user to screen #7
- Entering a search query on screen #7 displays the results on screen #8.
- Tapping the "purple finch" entry on screen #8 brings up screen #9
- The book icon on any screen brings users to the map on screen #10
- Tapping a map marker on screen #10 causes a blurb to appear as seen on screen #11
- Tapping a blurb from screen #11 brings up a detailed post -- screen #12
- Tapping the profile picture icon on any screen brings users to their own profile, seen on screen #13

#1 Welcome Screen

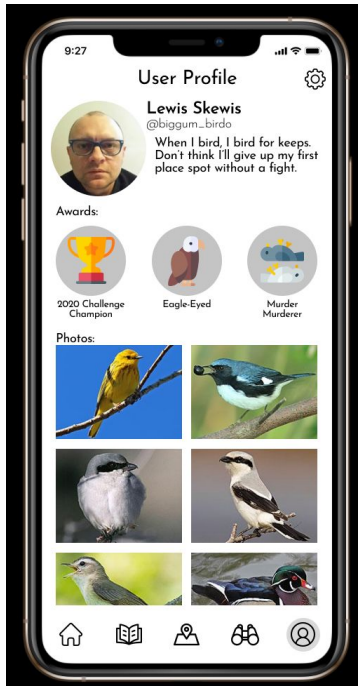
#2 User Sign-In

#3 New User Sign-Up

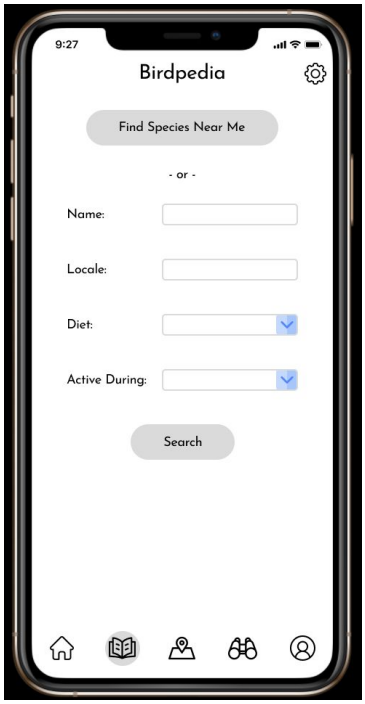
#4 Activity Feed



#5 Daily Challenge Detail



#6 Non-User Profile

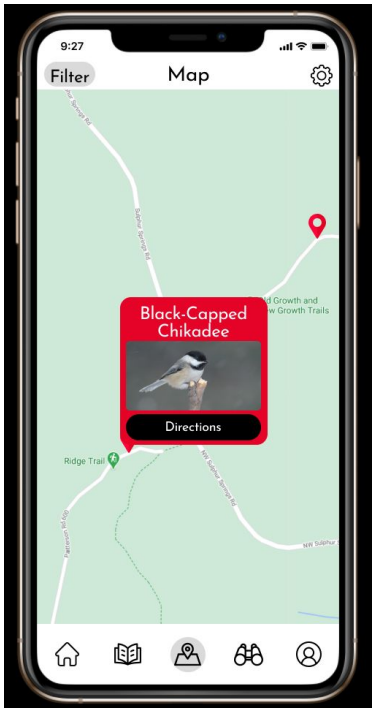


#7 Search Screen

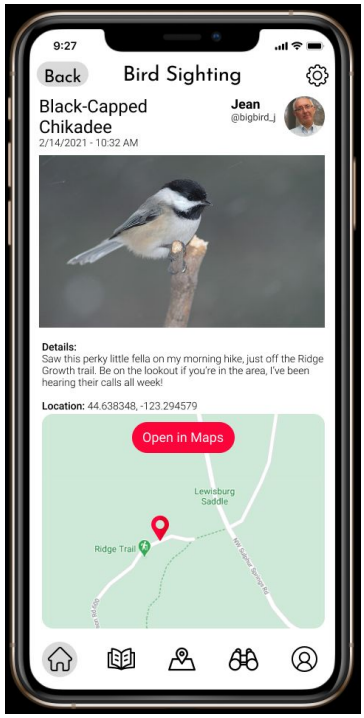
#8 Search Results

#9 Birdpedia Entry

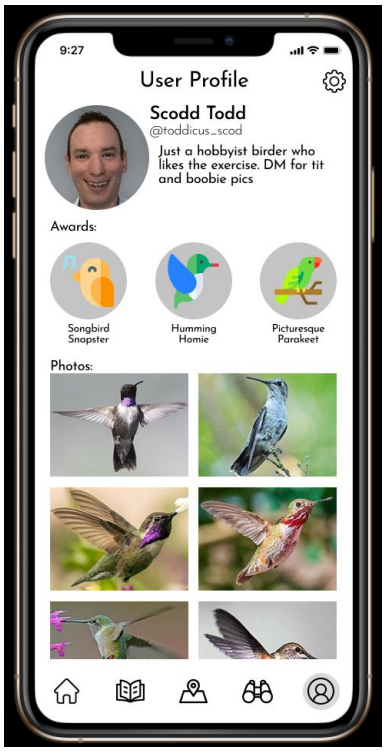
#10 Local Map



#11 Local Map with Selected Sighting



#12 Sighting Detail



#13 User Profile

Peer Evaluation

Member Name	Role	Responsibilities / Assigned Task	Task Completion Grade (0-5)
Wyatt Whiting	Management	- Empirical evaluation - Task Description - Interview / user Interaction	5
Kyle Folk-Freund	Design	- Introduction	5
Ethan Hirsch	Research / Communications	- Updated/consolidated concept	5
Nicholas Minton	Design	-Empirical evaluation, interviewee #2	5
Joseph Tong	Writing / Documentation	- Analytical evaluation process	5