Jack Phillips 5/12/2025

Final Project Write-Up Automation & Workflows

Project Title: A Better Bird of the Day

**Motivation**

Birdwatching as a hobby involves a lot of data collection. It can go hand in hand with citizen science to help ornithologists document the migratory patterns of birds as birdwatchers catalog their sightings. Birdwatchers can then access that data for recreational purposes, whether through researching nearby birds to find or getting notified of a rare bird in their area. The relationship is symbiotic; both groups want access to large swaths of bird-related data and help each other.

The Cornell Lab of Ornithology, one of the largest ornithology labs in the world, tracks sightings through its website and app known as eBird. Through eBird, you can sign up for an account, and when you go out birdwatching, they provide a simple interface to catalog what birds you see. eBird saves that data, keeps track of your life list (the total list of bird species you have seen), and has a media center to store photos and audio files. Through eBird, you can see local hotspots, sort them by species diversity and track ranges from other birdwatchers using the app.

When you open the eBird app, you are presented with a “bird of the day.” A photo of the bird is given, and you can click on it for more information about it. Having used the app for a while, I have no discernible reason or process for selecting the bird; it is more or less a nice photo to open the app to. However, the possibility of using this feature as a learning tool is evident. Instead of selecting randomly from a list of birds, some you have seen dozens of times, others that cannot be found in your area, a good “bird of the day” is a bird that is frequently spotted in your area but you have not seen before. This would allow the user to learn more about their local ecology, notice influxes of migratory birds, and give them a goal when they go birdwatching.

**Data Access**

Access to current data can be achieved through the [eBird API](https://documenter.getpostman.com/view/664302/S1ENwy59) and be interacted with in a Python environment through a set of wrapper functions provided by the [Python Package Index](https://pypi.org/project/ebird-api/). The API has numerous tools to access data, all needing location input. Location can be given in two ways: by latitude and longitude or by a region (or county) code. Through a function from [TranscendSurvival](https://www.transscendsurvival.org/2020/06/14/the-ebird-api-regioncode/), region code can be easily obtained from a given county and state. From there, functions return dictionaries, with some being saved as .json files. For example, region codes are saved when they are first loaded, so instead of running through the function again, the region code can just be retrieved from a .json file since the storage is minimal. To ensure compatibility, county data was sourced from [SimpleMaps](https://simplemaps.com/data/us-zips) to keep the user from inputting incorrect county information. Lastly, the user can upload a .csv file of their life list that can be downloaded from eBird. If no list is uploaded, it will not remove any bird from being recommended. Lastly, Wikipedia was used to give a short paragraph of information about a bird, as well as for giving images of the bird.

**Methodology**

The app is a Dash dashboard on an HTML page, with three dropdown menus to select state, county, and bird. The county is dynamically subset by state, and the birds listed in the dropdown are generated by gathering the list of all the birds observed in the past thirty days in a 50-mile radius. This decision was made to give a complete and comprehensive list of what more experienced birdwatchers might “expect” to find, even if the recommended bird of the day is subset from a more recent timeframe and smaller radius. Underneath the dropdown menus is a button reading “Generate bird of the day.” This will gather a list of birds observed in your county, sort them by how many times they have been observed in the last week, check your life list, remove any birds already seen, and suggest the top bird.

Underneath the bird dropdown and button, a hyperlink will be provided to go to the given bird’s eBird webpage, where there is more information. Underneath the hyperlink will be a short paragraph giving information about the selected bird, sourced from Wikipedia. This is typically limited to about 8-10 sentences and aims to grab a “Description” section from Wikipedia. Underneath the description will be three locations, sorted by their distance from the user, where a given bird has been spotted. If you have an extensive and robust life list, you may be suggested a bird that has not been spotted in three different locations. To the right of these will be a Plotly bar graph showing the given bird’s sighting trends in the past four weeks. This tool can be useful to see if a migratory bird is starting to come through your area or leaving. The bird of the day will populate a dropdown menu, but any bird from there can be selected. If you are interested in a different bird, scroll to that bird, and everything will populate the same way.

Underneath the information about the bird will be some information about your county. This will include two tables, telling you the most common birds being sighted in your county and rare birds that have been observed in your county, furthering your knowledge of what to look for.

Underneath all of these, a slideshow with pictures from the bird’s Wikipedia article will play. These pictures are mostly of the bird, but also include fledglings (baby birds), eggs, habitats, and others.

**Usage and Conclusion**

As a birdwatcher, the intended use is as follows. Launch the app and get the bird of the day. Use the given hotspots to determine where I’d like to go and then peruse my local trends. From there, I can use the bird dropdown to find some information on birds that have been previously recommended to me or I am generally curious about. If I hear about a bird and want to see if I can find it near me, I can look it up. If I can’t find it in the dropdown menu, chances are it hasn’t been in my area any time soon. If I can find it in the dropdown menu but I’m not given any locations, it may be gone from my area, which is valuable information.