**Executive Summary**

I propose to utilize the publicly available data in eBird and NOAA to analyze the correlations between temperature and bird observations. Some research was found by Audubon documenting future impacts of climate change. More research was found studying links between breeding and climate change. I hope to find areas with more extreme changes in monthly surface temperature and look for changes in range of species observations over time.

**Motivation**

I think this project has the potential to show undocumented relationships between climate and bird observation. Birds are fascinating animals and many are very specialized to their habitats. There are publicly available observation data on birds and climate for the whole 20th century. These data will allow me the chance to learn more about birds, climate change, and analyzing data along a time axis and using location.

**Data Question(s)**

The primary question for this analysis is: How have the range of bird observations changed over the last 70 years in North America? I want to evaluate these changes in location along with documented changes in climate over the same time period.

**Schedule (through 6/25/2020)**

1. Get the Data (5/15/2020)
2. Clean & Explore the Data (5/29/2020)
3. Create Presentation and Shiny App (6/12/2020)
4. Internal Demos (6/19/2020)
5. Demo Day (6//2020)

**Data Sources**

NOAA - <https://www.ncdc.noaa.gov/cdo-web/datasets>  
eBird - <https://ebird.org/data/download>

**Known Issues and Challenges**

I know that eBird’s data requires permission to download and use. I know that making visualizations on maps with a time axis is currently outside of my experience and may require quite a bit of learning to create. I know that both the NOAA and eBird datasets will be large and it may be challenging to find interesting changes in observed bird sightings. Weather data is noisy and has seasonality, many birds are migratory and may forage in areas where they don’t fledge. I’m not an expert in birds nor climate so I expect to learn a lot during this project.