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| GeoJaysProgress Report | Team MembersManager: Sara BreitAssistant Manager: David MillsGIS analyst: Daniela CastroGIS analyst and biologist: Dylan HamOctober 28,2015 |

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# Introduction

## 1.1 Summary

Immediately after our presentation, GeoJays began pre-processing avian sighting data and gathering features to create a geodatabase in order to complete the tasks for the Westcave Outdoor Discovery Center (WODC). This progress report serves as a baseline to update WODC of our task completions and changes made due to data-related obstacles. Currently, we have preserved the 2008 boundaries established by WODC. Meanwhile, our team has focused on digitizing and integrating useful features that aid volunteers in WODC trail navigation; this will enrich our overall reference map. The completion of our objectives and delivery of products is presently in line with our initial timeline, and should be ready by December 2, 2015. Refer to Figure 1.3 for an overview of the timeline.

## 1.2 Purpose:

The purpose of this project is to raise participation and awareness of avian conservation efforts for the WODC by providing its staff and volunteers with reference maps. Our objective is to produce user-friendly reference maps of each region, and an overall map with delineated boundaries and comprehensive bird count totals for the past ten years. Below are five critical tasks that will help us meet our project objectives and deadlines.

 Task 1: Pre-processing avian data according to region

 Task 2: Delineating Boundaries

 Task 3: Creating bird watching routes

 Task 4: Post-processing features, avian data, and routes

 Task 5: Aesthetics and map generalization

## 1.3 Scope:

GeoJays will continue to work within the fifteen-mile diameter study area. As we pre-processed the avian data, we have encountered several obstacles. First, Geojays found a spatial inconsistency between the past and current boundaries used by WODC. Some avian species were reported seen in regions that are no longer consistent with currently drawn boundaries within the study area. Presently, we are organizing avian species according to the regions in the study area. This spatial inconsistency has minimized our avian species sample, but not by a significant amount.



 *Figure 1.3*

# Project Tasks

## *2.1 Task 1: Pre-process Avian Data According to Region*

### 2.1.1 Previous Period

The data provided to our team by WODC is comprised of eleven years of myriad species spotted within the current boundaries as well as additional boundaries that no longer exist. Task 1 involved creating Excel files for all the species observations by year. The data was organized by year and species observations: after meticulous inspection, our team decided to only use bird data that matched the current study area and its boundaries when calculating individual region data. There are a total of ten regions that our wildlife biologist has sorted through. Due to the spatial discrepancy caused by inconsistent boundaries, coordination between our team and the WODC is of the utmost importance for completion of Task 1.

### 2.1.2 Current Period

A meeting was arranged to discuss the inconsistencies and provide resolutions to the WODC for our final deliverables. Task 1 is projected for completion shortly following a successful meeting with the WODC. *The objective of this meeting is to spatially understand the patterns observed by our expert wildlife biologist with regards to avian observations and possible “hotspot” distribution.*

### 2.1.3 Next Period

By the 28th of October the avian species data will have spatial relation to our reference map and will aid our team in creating visualizations of potential avian hot spots.

## *2.2 Task 2: Delineating Boundaries*

### 2.2.1 Previous Period

In order to achieve task 2 our team deferred to the WODC’s guidance and kept all of the current volunteer regions. These boundaries have been digitized and stored in the Westcave Circle geodatabase. We enriched the reference map by adding relevant features such as roads, counties, and supervised land cover (provided by the National Land Cover Database) to the geodatabase.

### 2.2.2 Current Period

Our team has completed the majority of this task. However, we are still digitizing many features in Adobe Illustrator to highlight additional important attributes in our reference map. A secondary objective to locate optimal parking lots is pending until we attain more information on private property lines and the WODC’s perspective on parking availability.

### 2.2.3 Next Period

Geojays meeting with the WODC representatives will clarify the inconsistencies with bird data and regions, and help us to obtain valuable insight of routes commonly traversed. We will us this information to begin post-processing attribute data and adding features or removing unnecessary features as required.

## *2.3 Task 3: Bird Watching Routes*

### 2.3.1 Previous Period

Initially, we were going to find the best routes according to the bird sightings as they related to the regions. However, the unforeseen inconsistency of regional boundaries altered our plan to achieve this objective. Our team decided that contacting Westcave Circle Christmas Bird Count (WCCBC) team leaders would be important to establishing which routes are commonly used for bird watching. The outcome of this meeting will provide more clarity and allow us to proceed with digitizing the most common routes used by WCCBC team leaders

### 2.3.2 Current Period

We are working on our layers and digitizing regions and major roads. We are also looking for tentative bird-hiking trails. However, these will also be cross-referenced with the WODC in order to gain necessary and valuable input.

## *2.4 Task 4: Post-processing Features, Avian Data, Hot Spots and Routes*

## 2.4.1 Previous Period

Our first task was to organize our avian data and search for any meaningful patterns. Summating the counts of all the species observed is very important to interpreting the data and establishing what kind of analysis can performed on the data. Secondly, we gave the avian species data spatial significance by joining the regions and species. After this was accomplished, our team encountered the first problem. When this join was performed the avian data was randomly sorted in its pertaining region where the sighting occurred. In order to perform a meaningful analysis of hot spots within each region, our team would require absolute locations of sightings.

## 2.4.2 Current Period

Presently we have focused on post-processing features until we meet with the WODC to discuss the avian species data. We have digitized features that are important to our reference maps such as major roads and natural features occurring in regions. We are still looking for a DEM to get topographic contour lines that would be useful in our reference map. Our next step is refinement and aesthetics.

## 2.4.3 Next Period

After meeting with the WODC we will have more information on which species may be of particular interest in each region. This will allow us to depict the information spatially and gain more valuable insights on the avian data that we have processed. Our goal is to be able to identify what type of analysis would be adequate given our data set and to spatially associate a species of interest with each region.

## *2.5 Task 5: Aesthetics and Map Generalization*

### 2.5.1 Previous Period

Aesthetics are very important to communicating our spatially significant data and for providing the WODC with user-friendly and attractive maps. Our team sketched several concept drafts of what our final output could looks like. We will be using our drafts to guide us in creating the final product.

### 2.5.2 Current Period

Currently, we are experimenting with multiple combinations of color schemes, designs, transparency values and other tools in Adobe Illustrator. An aesthetically pleasing version of the reference map will be a useful resource for both WCCBC volunteers and for educating visitors of the WODC.

### 2.5.3 Next Period

We will dedicate a significant amount of time to map design and graphics, especially after receiving feedback from the WODC. This feedback will be invaluable to our final product and useful for finishing our map.

# Conclusion

After meeting with the WODC, the Geojays will consult an expert statistician to provide guidance on the analysis that best fits the WCCBC avian data. Thus far, we have tabulated the avian data and performed basic descriptive statistics that have painted a clearer picture of which specie is most frequently occurring in each region. At the moment, the team is focusing on adding features that are relevant to the reference map and identifying our bird data’s spatial significance for optimal visualization. GeoJays strives to deliver the most objective and visually aesthetic products that will further the goals of the Westcave Outdoor Discovery Center and the Westcave Circle Christmas Bird Count.