BIRD SPECIES RICHNESS COMPARED BETWEEN TWO LOCAL WETLANDS

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ABSTRACT

The Old Crow wetlands of Huntingdon County, Pennsylvania are currently faced with the potential construction of a Rutter's gas station at a proximity detrimental to the wildlife found there. Old Crow is known for its bird species richness and plays a significant role in preserving the biodiversity seen in Huntingdon County. This study aims to justify the protection and preservation of the Old Crow wetlands by surveying the bird species diversity found there and comparing these results to a neighboring wetland found at Juniata College. To collect this data, we conducted several surveys of the bird species at each of these locations. By observing the bird species diversity and counts at these locations we hope to show the importance of Old Crow as an area of high species richness. Our results showed a higher individual abundance and species richness at Old Crow wetlands than seen at Juniata. This data proves our hypothesis and shows that the Old Crow wetlands should be preserved as they are an important source of biodiversity.

Key words: species richness, wetlands, birds

INTRODUCTION

In Huntingdon County, Pennsylvania, there are two distinct wetland areas. One is located at Juniata College and the other being Old Crow Wildlife Observation Area. Old Crow was created in 1997 as a PennDOT Advance Wetland Compensation Project, and was originally a wetland, but was tiled for agriculture. PennDOT restored the wetlands, and it is now successful, at one time having the most bird species counted in the state. Recently, the Rutter's gas station chain has planned to construct a location adjacent to and uphill of these wetlands. In our research, we seek to help justify the importance and preservation of these wetlands to Pennsylvania and Huntingdon County's bird species richness. It has been shown that noise pollution can have detrimental effects on bird populations. Most commonly when an area gets too noisy song birds either leave to a quieter area or stay and fare less well [1]. We are observing the species diversity and count of bird species at both the Old Crow Wetlands and the wetlands at nearby Juniata College. We hypothesize that because of the isolation, diversity of vegetation at Old Crow, and presence of multiple larger water sources, we will find a greater diversity of species at Old Crow than at Juniata College, a similar, but much smaller and less isolated, wetlands.

FIELD SITE

The two areas observed are both classified as wetlands. Old Crow is 7.6 acres and located directly off William Penn Highway in Huntingdon Pennsylvania. It is primarily made up of tall grasses with trees scattered about along with small bird houses. Walking paths are present but are not well maintained from our observations. Old Crow contains two large ponds that are home to snapping turtles.

The wetlands located outside of East Houses at Juniata College are 2.6 acres. There is a lot of foot traffic in this area along with lots of disturbance and

pollution due to the movements of the students. These wetlands are primarily composed of tall grasses with two large trees located on the border of the wetlands. Muddy run creek runs along the opposite border of the wetlands.

METHODS AND MATERIALS

Over the course of several days, Old Crow Wetlands and the Juniata College wetlands were studied to determine the exact number of different taxa of birds found in these different environments. The wetlands were similar in overall composition but differed in the amount of foot traffic as well as size. Observations were taken for differing amounts of time, in numerous types of weather and times of day to try to accurately count the number of species present. Binoculars, bird identification books, as well as online resources such as the Cornell Bird Lab as well as YouTube were used to identify species. Statistical analysis of both wetlands was then done to determine the differing species richness as well as statistical significance.

RESULTS

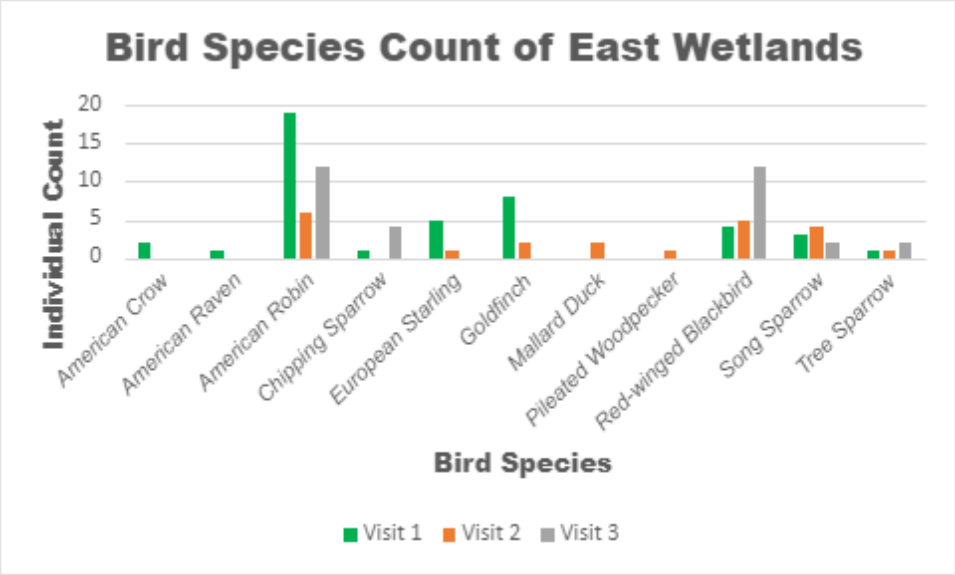

Fig 1. Chart showing count of birds at the east wetlands, arranged by species and visit number

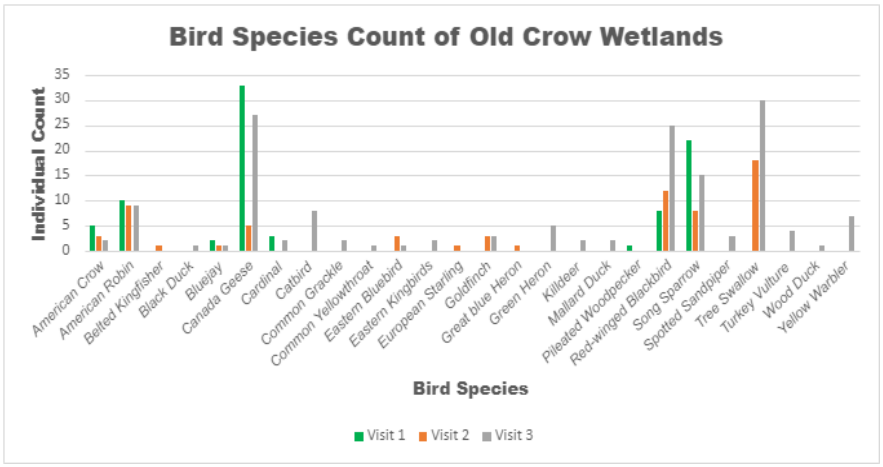

Fig 2. Chart showing count of birds at Old Crow Wetlands, arranged by species and visit number

Location	Species Count	Individual Count
East	11	98
Old Crow	26	302

Fig 3. Table showing location, species count, and Individual count of birds in the study

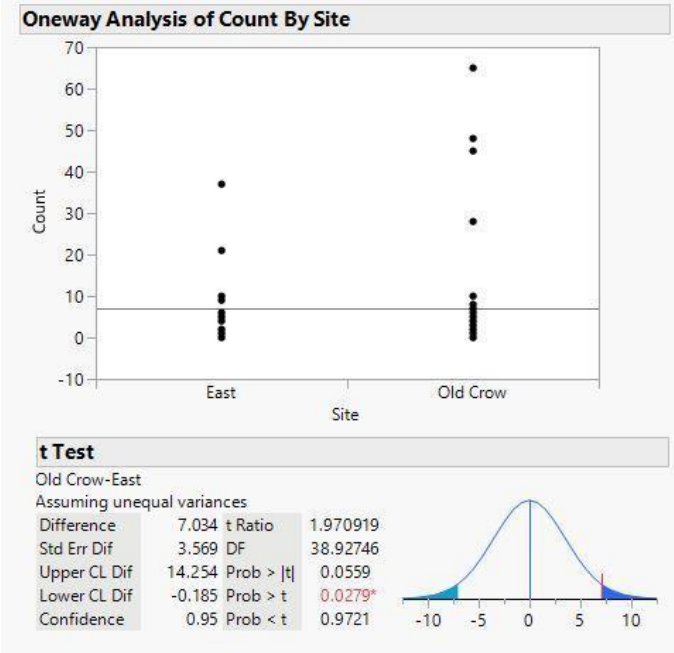

Fig 4. Shows the t-Test comparing individual bird abundance

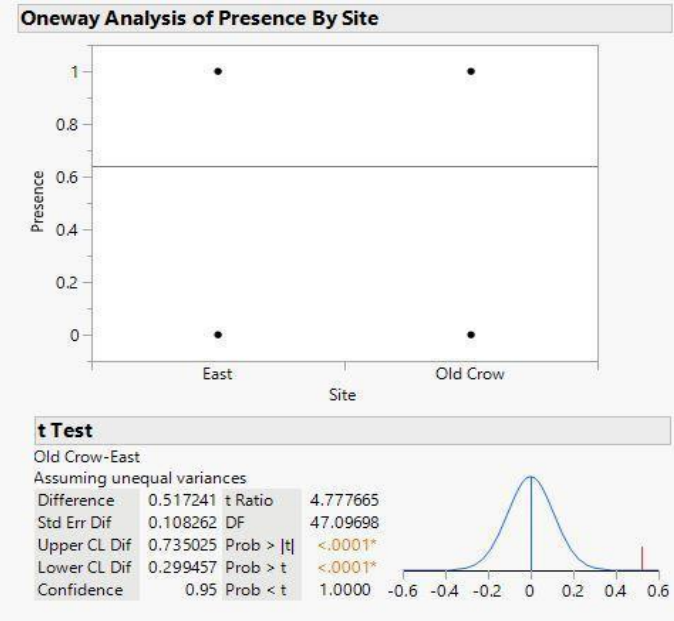

Fig 5. The t-Test showing the relationship between species abundance

DISCUSSION

The t-test values indicated in both our individual (Fig. 4) and species abundance (Fig. 5) tests were statistically significant. This is unsurprising as Old Crow wetlands have over twice the species of birds as Juniata wetlands and showed more than three times as many birds total as shown in Fig 3. Also, to keep in mind when trying to evaluate the environmental importance between the two wetlands, one must consider the species present at each location. Old Crow was home to two different heron species, three different duck species, and two different plover-type birds (Fig. 2). Not included in the results were the other observable benefits of Old Crow's surrounding reeds and grasses, including a nest of six goslings being raised within the preserve. To truly measure the value of Old Crow, we must acknowledge that wetlands are growing increasingly scarce. Between 1992 and 1997, 49% of wetland habitat losses in the eastern United States were attributed to development. From our observations, it is evident that not even similar wetlands habitats in the immediate area can support the species richness and count that is thriving at Old Crow, making it a pertinent part of Huntingdon and Pennsylvania ecosystems. Losing any of the current land at Old Crow or risking increased pollution would be a terrible loss to the local wetland ecosystem and to regional biodiversity as a whole.

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LITERATURE CITED

Causes of wetland losses. 2000. Pennsylvania Natural Resources Conservation Service website accessed May 7, 2022. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/pa/home/?cid=nrcs143_013954

Halfwerk, W., B. Lohr and H. Slabbekoorn. 2018. Impact of man-made sound on birds and their songs. Pages 209-242 in H. Slabbekoorn, R.J. Doolong, A.N. Popper and R.R. Fay, editors. Effects of anthropogenic noise on animals. Springer, New York.