



Research Experiences for Undergraduates (REU) 2013 Abstract

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Wildlife Conservations are constantly searching for new ways to aid in the development of management tactics for endangered species. Many species of the animal kingdom make use of their vocalization abilities to communicate with others. Researchers have begun developing ways to monitor population dynamics of endangered species by taking advantage of this natural sound source. The prairie warbler, native to the Eastern United States, has been placed on the Audubon Conservation WatchList as a result of a decline in their natural habitats due to anthropogenic causes. The goal of this project was to create a working algorithm for detecting prairie warblers within unattended sound files. This process was broken up into four separate components: 1) collection of raw data from multiple methods, 2) preprocessing of the data for input into a neural network, 3) training of the chosen neural network using large data sets, and 4) testing the performance of the algorithm on two realistic data sets obtained by ground-based and balloon recordings. The tests on the first data set led to a 91.7% detection rate of prairie warbler calls, with only 9 false positive classifications. There was a 100% detection rate of prairie warbler calls for the second data set, with 15 false positives.