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Analysis of Demographic Variation Reflected by Colony Size in Cliff Swallows

A critical question in animal biology is why animals aggregate. Aggregation may for example provide safety from predators and higher foraging efficiency. The cliff swallow is an aggregating animal species and is one of the most intra-social and colonial bird species in North America, making them prime research subjects for aggregation studies. Here I investigated if colony size is a deciding factor for individual birds choosing where to nest. Data from cliff swallow colonies in Boulder, Colorado were compared to the results of a Nebraska study on variation of age composition among colony sizes in cliff swallows. The Nebraska study found that there was a higher distribution of young birds in larger colonies and old birds in smaller colonies. Initial results revealed an age-class proportion to colony size trend similar to that of the parent study. A Hypothesis Test using Python programming language revealed no difference in probability for older birds choosing a colony based on its size. I used the p-value (~ 0.04) calculated from my data during the Hypothesis Test to determine statistical significance (< 0.05) and reject the null hypothesis. This result supports my hypothesis that colony size reflects the aged-based sorting of cliff swallows among colonies in Boulder, Colorado. The analogous conclusions of these two otherwise differing studies speaks to the relationship between the demographic variation and size of cliff swallow colonies.