



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Ariel E.T. Single	Project Number J1927
Project Title Effects of Habitat Diversity and Pond Size on Bird Abundance and Species Diversity: A Two Year Study	
Abstract Objectives/Goals My objective was to see how habitat diversity and pond size in flood basins affected the numbers of birds and the species of birds using the ponds, over a period of two years. Methods/Materials I estimated the size and counted the number of habitats for 8 ponds in NE Fresno. I identified and counted birds at each pond 10 times in December-January (2002-03,2003-04). Materials: pencil, binoculars, camera, paper, bird identification book, statistical software (SPSS), MSWord and Excel, car, driver, ladder. Results Ponds were 3-11ha, with 3-7 habitats. 23 species of birds were observed. The number of species per observation at each pond was 1-12, and the number of birds was 0-51. In Year 1, habitat diversity was not a significant predictor of species diversity, but pond size, and the interaction of pond size and habitat diversity were. In Year 2, habitat diversity, pond size and the interaction were all significant predictors of species diversity. Using data from both years, habitat diversity, pond size, and the interaction are all significant predictors of species diversity. Only pond size was a significant predictor of bird abundance in Year 1. In Year 2, neither of the variables was a significant predictor of bird abundance. When the data from both years are combined, only habitat diversity is a significant predictor of bird abundance. Conclusions/Discussion Both habitat diversity and pond size affected species diversity. But larger ponds did not always have greater habitat diversity. Maybe the larger ponds provide more space, so that more kinds of birds can tolerate being in the same area. There were different predictors of the number of birds in Year 1(pond size), Year 2(none) and both years combined (habitat diversity). There were only small differences in bird abundance between years. There was a big difference in species diversity. The relationship of habitat diversity and pond size to species diversity and bird abundance changed between years. Other things could affect species diversity and bird abundance, such as yearly differences in bird populations, movement of birds into or out of the study area, small changes in pond characteristics, or other things I did not measure. The results could be used to help design ponding basins to make them better for birds, or influence the kinds of birds that use them.	
Summary Statement I looked at how the number of birds using flood basins, and their species diversity are affected by size and habitat diversity of the ponds.	
Help Received My parents drove me around, and helped with typing, data input, putting the board together, and using SPSS. The satellite photo is from the California Department of Fish and Game.	