# Yearly Bird Observations

CAP LTER Data Explorations

**Author:** Ecology Explorers Team, adapted from Cook, W.M. 2005. Long-term bird community patterns at Phoenix's Desert Botanical Garden. Poster presented at 19 January 2005 CAP LTER Seventh Annual Poster Symposium.
**Time:** 15-30 minutes
**Grade Level**: 9-12

**Background:**
The Phoenix urban core is composed of several contiguous cities and is situated within the Sonoran Desert. This area is being studied by scientists as part of the long-term ecological research network (LTER) funded by the National Science Foundation. Our project, the Central Arizona-Phoenix LTER (CAP LTER) is focusing on researching the effects of urbanization on the surrounding desert ecosystem and vice versa. The Phoenix area is growing rapidly with a population of 300,000 people in 1950 and 3 million+ in 2005. The area receives annual precipitation of 180 mm (6 inches) and can experience summer temperatures as high as 48 C (115 F). The rain comes twice a year (winter & summer), which contributes to the high species diversity of the Sonoran Desert as compared to other North American deserts. Urbanization of this area has led to decreased agricultural development (formerly focused to the west, south, and southeast of the urban core) and increased water control via dams, reservoirs, and canals. The data presented here was collected weekly by volunteer birders at the Desert Botanical Garden from mid-1980s until 2004 and analyzed by CAP LTER Post -doctoral associate William Cook in 2005.

**Objective:**
Students will analyze patterns of seasonal bird observations.

**Standards:**
**Science**

**Advanced Preparation:**
Students should have been introduced to basic information about population and community ecology.

**Materials:**
Seasonal Bird Observation Graphs
Student Worksheets

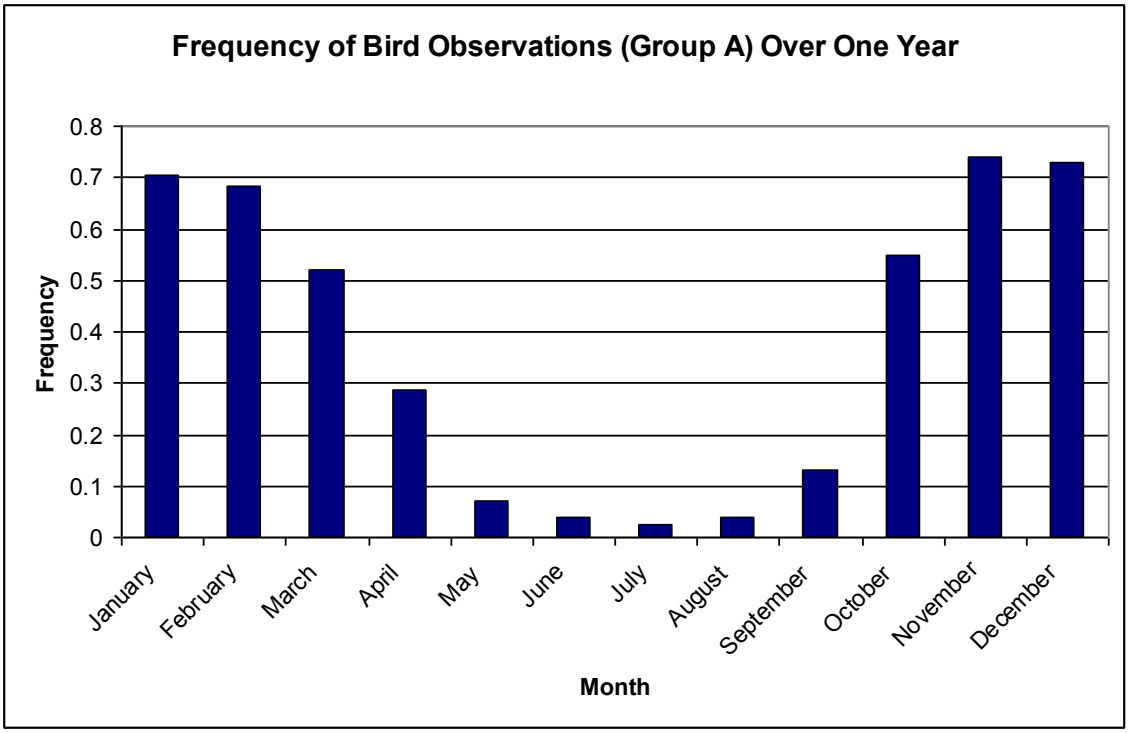
**Evaluation:**
Observation during the activity and participation in discussion.
Student responses to reflection questions.

**Extensions:**
Have students conduct their own observations of birds on campus or at home following the Ecology Explorers Bird Protocol (http://caplter.asu.edu/explorers)

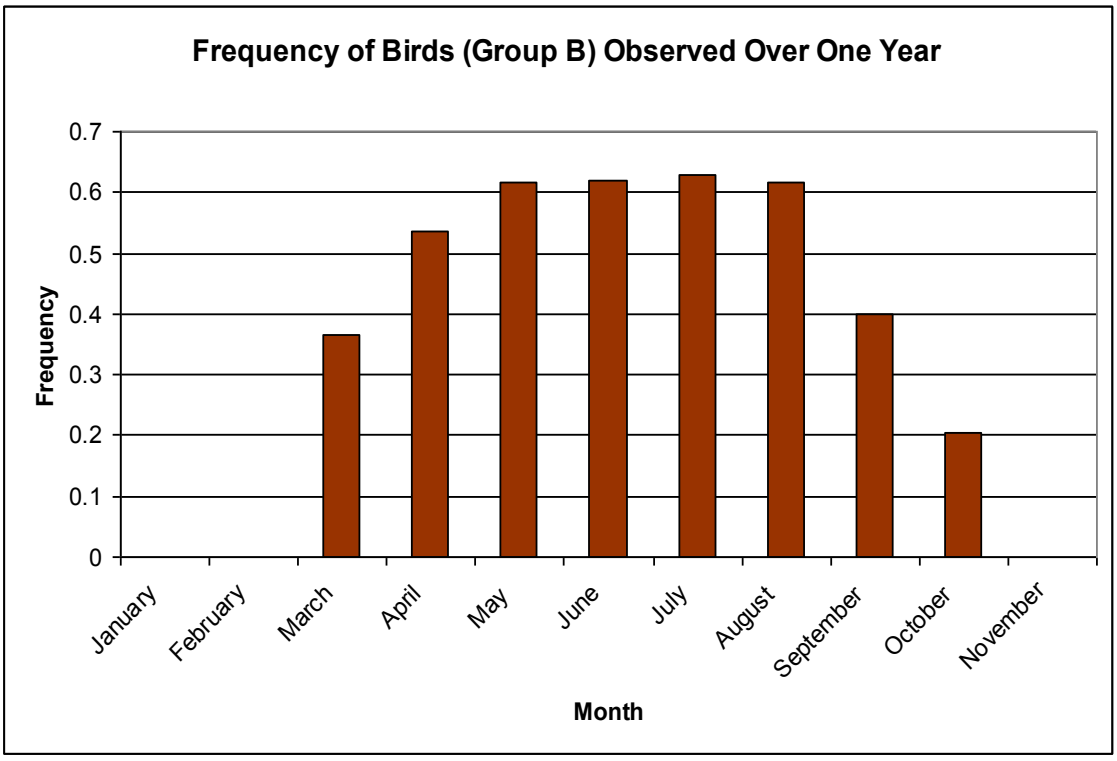
# Student Worksheet

Birds Observations

These data were collected on weekly bird walks from 1987-2004 in the same location. The observers recorded the absence or presence of a particular bird species, so a frequency of 0.7 means that the observers had a 70% chance of seeing those bird species on any given bird walk during that month.




Group A:
Cooper's Hawk
Costa's Hummingbird
Ruby-crowned Kinglet
Yellow-rumped Warbler
White-crowned Sparrow




Group B:
White-winged Dove
Brown-crested Flycatcher
Ash-throated Flycatcher
Turkey Vulture
Black-chinned Hummingbird

1. What does Graph # 1 tell you about the abundance of the Group A birds over the year?

2. What does Graph # 2 tell you about the abundance of Group B birds over the year?

3. List any environmental components of the desert southwest that you think might contribute to some birds being “winter residents” or “summer residents” .

4. How might climate change affect birds in each of these groups?