

## Do birds prefer warm or cold weather?

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### Introduction

Birds, like humans, are warm-blooded (endothermic) animals, which means they must maintain their body temperature internally despite the temperature of the environment. This also means the body temperature is fairly steady. The body temperature of birds is between 37.5 and 43.5°C, but birds have features that make temperature regulation more difficult than for most mammals.

Most birds spend much of their time looking for food and eating. They can't store food very well; in the wild, a 25-gram bird (about one ounce) has enough energy stores to survive for about two days without eating, if it is thermoneutral. Thermoneutral means that the environmental temperature is in a range where the bird doesn't need extra energy to keep or lose body heat. For most birds, if the air temperature drops below 16.6°C they have to produce more heat, and if it rises above 27.5°C, they must lose heat. Birds will change their behavior to regulate their body temperature: they can reduce heat loss by 20–50% by sitting or by hunching down. Since overheating is a bigger problem, they will also rest out of the sun during the hottest part of the day.

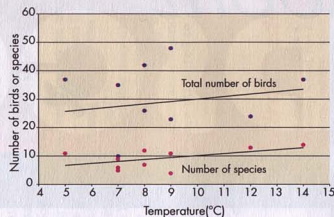
### Hypothesis

More birds will come to the feeder at Downy Creek on warmer days than on cooler days.

### Materials and Methods

I observed the feeder at Downy Creek 10 times between November 20, 2003 and March 2, 2004. I used binoculars behind a blind to count the total number of birds at any one time at the feeder, and also identified and

Numbers of birds and species compared to temperature



counted the number of each different bird species at the feeder. I recorded the counts on a tally sheet. Also recorded was the time of day, the length of time I spent behind the blind, and the weather conditions. Weather data were provided by Mr. Phil Kahler (from the TVJA weather station).

### Results

The data gathered at the bird blind at Downy Creek doesn't support my hypothesis, but it also doesn't disprove it. There were four days when temperatures were 9°C or greater, and the average count was 31.5 birds. There were 5 days when temperatures were between 7 and 8°C, and the average count was 23.8 birds. Warmer days had a higher average count of birds. But there was one day below 7°C (it was actually 5°C), and I counted 37 birds. So, on both the coolest day (5°C) and the warmest day (14°C) I counted the same number of birds (37). The highest count day (48 birds) was a slightly above-average day in temperature. I also graphed the total number of different kinds of birds compared to temperature. Most of the time, as the temperature went up the number of species at the feeder went up, and when the temperatures were lower, I

counted fewer species at the feeder.

### Discussion

Winter temperatures in Hillsboro, Oregon, are very mild and don't change much from day to day. The lowest temperature I recorded was 5°C (41°F) and the highest was 14°C (57°F), and both were below the temperature most birds require to keep their temperature steady without extra energy.

There may have been other reasons for more or fewer birds at the feeder. On mild, rainy days it could be that birds were able to find more worms and insects early in the day, and then rested to keep themselves warmer. The highest count came on a day with a heavy rainfall (0.69 cm), and it's possible that it was too wet for birds to find natural food, and so they went to the feeder. I also noticed that on cloudy days there were usually more birds at the feeder, and it's possible that cloudy days give more protection from predators than sunny days. Wind direction didn't seem to affect the numbers of birds at the feeder but when the wind speed was higher more birds showed up. It could be that the smaller birds wanted to stay close to the ground and out of the wind.

### Conclusion

I learned that birds will be most active when the air temperature is between about 17°C (63°F) and 28°C (82°F), and that they have to use more energy to regulate their body heat when it's outside those temperatures. Since temperatures were so similar when I made my observations, and every air temperature was below the thermoneutral point for birds, I couldn't prove or disprove my hypothesis. The hypothesis should be retested by using a larger data sample, with greater temperature changes. □