Effects of Temperature on Mobbing Responses of Birds to a Screech Owl Call

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Abstract

This experiment examines the effects of temperature on the number of birds responding to a birdcall in the various trial sites. The trials took place at Weymouth Woods Nature Preserve in Southern Pines, Green Swamp Nature Preserve in Supply, at the top of Mt. Jefferson near Jefferson, and Reedy Creek Preserve near Charlotte. Therefore, there was a set of trials from each region with a variety of ecosystems. At each location, three to five trials were conducted in the same general location but at different temperatures. In order to attract the birds, a tape recorder was used to play a Screech Owl (*Otus asio)* call. This draws the local birds close enough to be heard and/or spotted. The tape was run for ten minutes, after a control run with a Red-eyed Vireo *(Vireo olivaceous)* call, with all birds recorded when identified or marked as unknown. My hypothesis was: If the temperature in the trial area increased, then the number of birds to respond to the Screech Owl call would decrease. This is because, like humans, birds tend to avoid the heat. Instead they remain hidden, only coming out to do things such as find food or add to their nest. The tested temperatures ranged between fifty-five and a hundred degrees. The results show, however, that temperature did not affect bird response significantly.

Introduction

Birds are a part of everyday life. We enjoy listening to them as they sing and watching their bright colors flash as they dart throughout the trees. However, studying birds is much more difficult than you may believe. Most birds will not stay still long enough for a researcher to identify them or will not come close enough to be seen in general. In addition many factors play a role in what birds will be seen in an area and

when, such as temperature, time of year, and time of day. So, how do we get the birds to cooperate? Well one technique is to draw out birds by playing the call of another bird, normally a predator of the local birds. When the birds hear the call they tend to form a "mob" around the location the call is being played. In this experiment, the call of a Screech Owl *(Otus asio)*, which is commonly found in the same area as many songbird species, was used. Therefore, in order to defend their territory the agitated birds will fly towards the noise searching for the threat while sending out warning calls to other birds, which may lead to more birds being attracted. The location of a viewer, along other with factors, may affect the response to the call. For this experiment the question is whether or not temperature affects bird response to a mobbing trial using a Screech Owl call. Before the trials, basic information on the area was taken, for example the cloud cover and wind speed.

Methods

When out for a walk in the woods, hikers may normally spot several birds or hear them sing. However, the problem is encouraging the birds to come close enough so they may be identified. This is when the method of using birdcalls plays a key role in bird research. When using this technique a recording of a birdcall is played in order to irritate and excite the nearby birds and make them become curious enough to come to you to investigate the noise. Before the trial certain data such as the location of the trial, the temperature, cloud cover, and time of day must be recorded. These factors may affect how many and what types of birds will be seen. First, a tape recorder and recordings of two common birdcalls is needed. Binoculars, a data sheet, a way of recording birds, a

thermometer, and, a guide to birds in the area are needed as well. The first is the control, in this case a Red-eyed Vireo song, which is a bird that is commonly found in the area and is harmless to the other birds. This is mainly to get an idea of what birds are in the area. The second recording, in this case a Screech Owl, must be of a bird of prey common in the area. Once the birds hear this call they will come out more to investigate, and warn other birds. The next is to find an area where birds can already be heard or seen. Then, the tape recorder is located such that the sound will travel. Finally, each tape is played for ten minutes at least, taking note of all birds seen. At the end, a determination of the species and number of birds is made.

Results

The tables and graphs show the response at each temperature and at the four different locations.

Table 1: Total bird response.

	55°F	65°F	67°F	72°F	72°F	76°F	77°F	78°F	78°F	80°F	80°F	85°F	85°F	87°F	90°F	100°F
Total Bird Response	5	8	25	28	12	16	8	12	20	13	10	0	15	17	18	2
Total Identified Birds	3	8	24	28	10	15	8	12	20	13	10	0	0	15	18	2
Total Unknown Birds	2	0	1	0	2	1	0	0	0	0	0	0	0	2	0	0

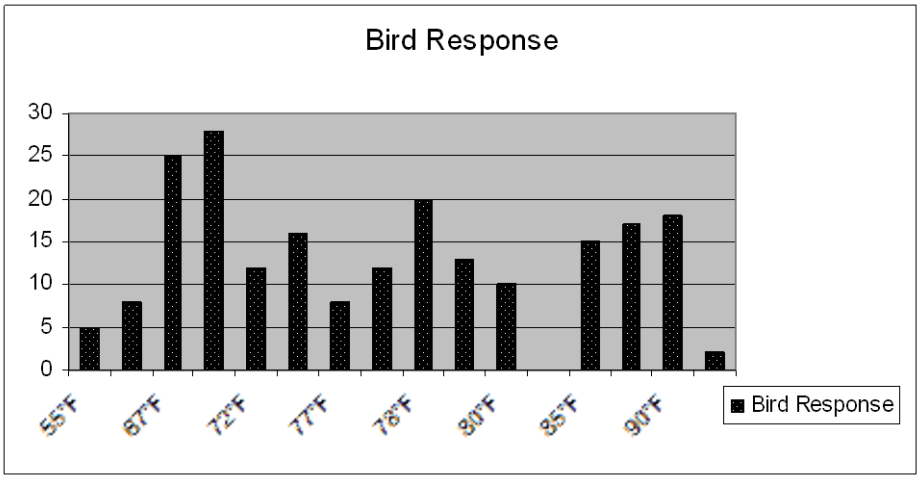

Figure 1: Bird response.

Table 2: Temperature Response per Location

	55°F	65°F	67°F	72°F	76°F	77°F	78°F	80°F	85°F	87°F	90°F	100°F
Location 1	\	\	\	28	\	\	12	\	0	\	18	2
Location 2	\	\	\	\	15	\	20	\	15	17	\	\
Location 3	5	8	25	\	\	\	\	13	\	\	\	\
Location 4	\	\	\	12	\	8	\	10	\	\	\	\

From the graphs, it is hard to tell if there is any connection. When these data are used in a linear regression equation the *t* calculated is .6059697 and the degrees freedom is fourteen. Looking at the five percent probability column on a critical values chart for *t*, at ten degrees of freedom the critical *t* is 2.14. Therefore, there is no significance between temperature and bird response.

Discussion

Looking at the results themselves there is no obvious connection between temperature and bird response. Using a linear regression equation shows no connection between the temperature in a trial area and the number of birds that responded. However, the data was not consistent and the number of birds did vary but not according to temperature. For example, two trials happened at eighty-five degrees Fahrenheit and while one trial had no response, the other had fifteen birds respond.

Conclusion

Overall there is no connection between temperature and bird response to a Screech Owl call. However, there were errors due to things such as varying weather and the tests being done at different times of day. The variation in cloud cover and wind speed should not have affected the data much. For future tests, this experiment could be done at different locations or maybe a different birdcall to see how many birds respond.

Literature

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- McPherson, R., Brown, R. (1981) Mobbing Responses of Some Passerines to the Calls and Location of the Screech Owl. Raptor Research, 15(1), 23-30