

TRES Behaviour Project Beaverhill Bird Observatory

Project by: Caroline LeCourtois, B.Sc., BIT

May 2013 - September 2013



*Golondrinas
de las Americas*



Introduction

Since 1984, the Beaverhill Bird Observatory (BBO) has been actively interested in monitoring the natural area near Tofield, Alberta, Canada for bird populations and migrations. In 1987, the BBO was designated the stewards of the Beaverhill Lake Natural Area. A bird banding laboratory was built in 1986. Over the last 12 years the laboratory has been staffed by summer students who, along with a keen bunch of volunteers have been banding and counting birds in the natural area.

The Golondrinas de las Americas is an international community of biologists studying swallows from Northern Alaska to Argentina and has been affiliated with the Beaverhill Bird Observatory since 2008. The goal of this new study is to try to test more rigorously whether there are consistent site-level differences in the response of adult Tree Swallows to a potential stressor, in this case a novel object: the frightening rubber duck. As such, interns were needed in order to study various factors that could help with a simple study across the Golondrinas de las Americas network investigating geographic variation in exploratory behavior/risk taking in Tree Swallows (assessed initially as a response to a novel object).

They put out a request for individuals to perform a voluntary research project on the Tree Swallow (*Tachycineta bicolor*) nest boxes in the Beaverhill area. These nest boxes were installed on a numbered grid near the observatory. Caroline LeCourtois has taken part of this project and has conducted a behaviour analysis on the Tree Swallows in relation to the reaction to a foreign object and distances to neighbouring next boxes.

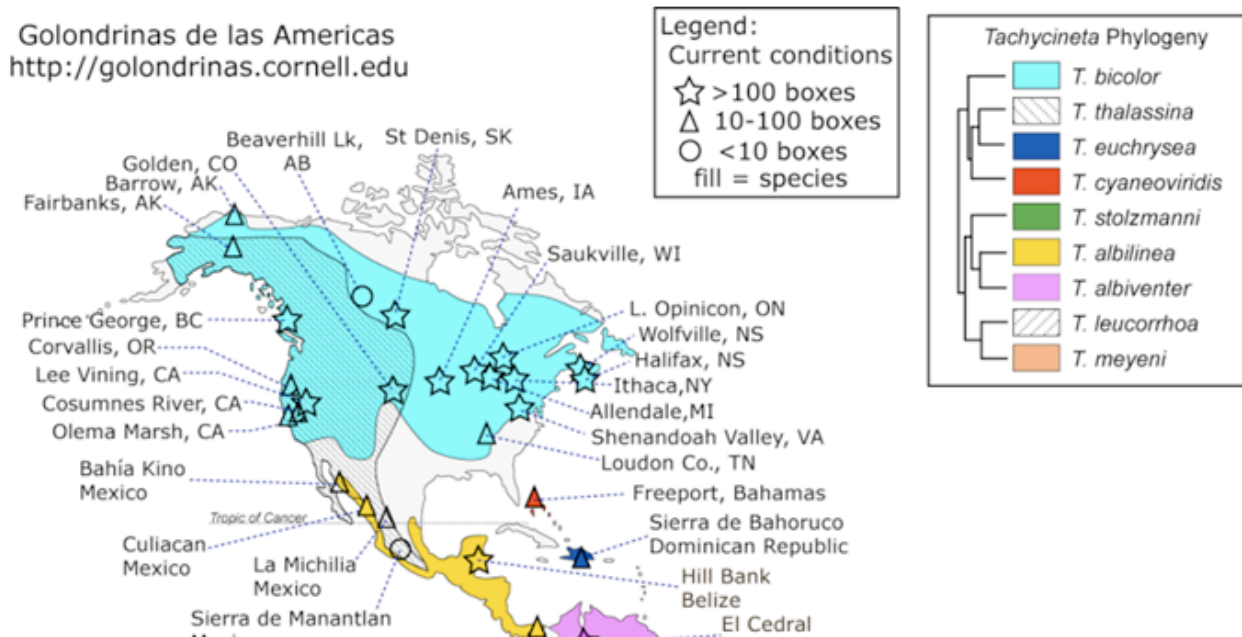


Figure 1. Map of the Golondrinas de las Americas sites in North America

Objectives

This research project aimed to monitor the behavioural trends of adult nesting Tree Swallows following the introduction of an unknown object to the nest box. In this particular study, the distance between neighbours was measured to determine if it affected the reaction of the adults to the unknown object.

This project involved the setting up of nest boxes, maintenance, and periodic monitoring to study the development of the young and performing novel object tests.

Materials and Methods

Tests were conducted between 0700-1200 on day 6 or 7 (hatch day = day 0) of the nestling period. Monitoring of nests was done from a position that did not influence or affect the behavior of the birds (either from a hide >25 m away, from a vehicle, or from a distance >100m).

Protocols from J. Rivers instructed to wait until an adult is observed leaving the nest on its own, then approach the box, place your hand on the top of the box momentarily, then return to your observation position and begin a 30 min nest watch.

Once back in positions, individuals were required to record

- 1) the latency of the first feed, and
- 2) the total number of feeding visits during the 30 min period.

Then, again waiting until an adult is observed leaving the nest box and the area, we approached the nest box and placed a yellow toy rubber ducky on top approximately 1" from the front edge of the roof and centered over the hole. Once in position, the stopwatch was started and we quickly moved away to the original observation location. Binoculars were used to observe for any entry/exit of the nest box as well as any territorial or behavioural reactions to the foreign object.

Precautions were taken to ensure that we were positioned far enough away from the nest so that the adults are responding to the novel object at the nest and NOT to our presence. The following information was recorded:

- Number of seconds elapsed from the time the object was left on the nest, to the time it took for the FIRST adult to return to nest box area,
- Number of seconds elapsed from this arrival time, to the time the first adult fully entered nest box (even if the entering bird is not necessarily the same bird that first entered the vicinity of the box),
- Number of physical contacts with the ducky made by adults prior to entering the nest, and
- Number of nestlings in the box.

If no adult entered the nest within 30 minutes of the first arrival in the nest vicinity, the trial was terminated and the ducky was removed. If an adult did enter the box, the trial was ended and the ducky was removed. Nestlings were counted immediately after the end of the trial.

Other parameters that were measured include:

- Box number
- Location (on which grid)
- Date
- Observer(s)
- Weather conditions
- Distances to surrounding nest boxes

Results and Discussion

The monitoring of nest boxes began on May 29th, 2013, 6-7 days following the hatching of the first chicks. The final day of monitoring occurred on June 29th, 2013. The sample size for this project was 24 nest boxes. The total number of nest boxes was 46. The discrepancy in this is due to some of the boxes being used for a different project, being empty, or chicks were not of the proper age to fall into the appropriate timeline for this study.

Correlation between TRES nests distances and proximity

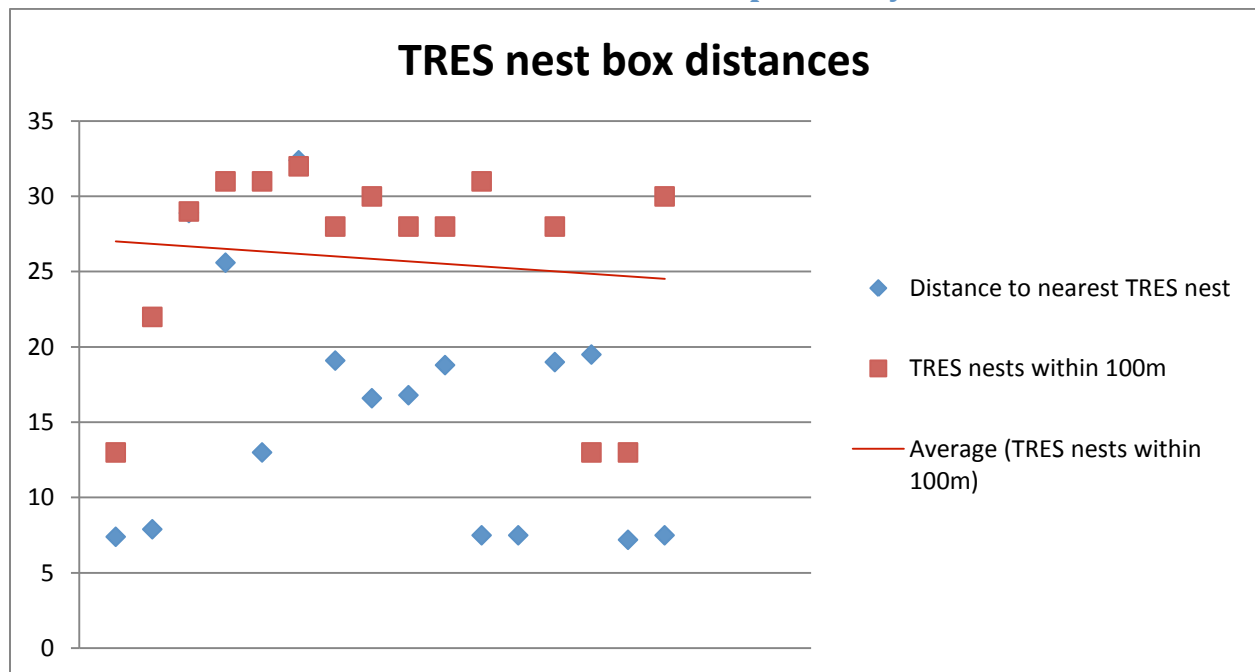


Figure 2. Distances between TRES nests (blue) and number of TRES nests within 100 metres (red)

Based on the analysis of distances between nest boxes, the average distance was 15.4 metres. The largest distance was 32.4 metres away and the closest distance was 7.2 metres. Following comparisons and data analysis, it was determined that there is no direct correlation between distances to neighbours to the number of TRES nests within 100m.

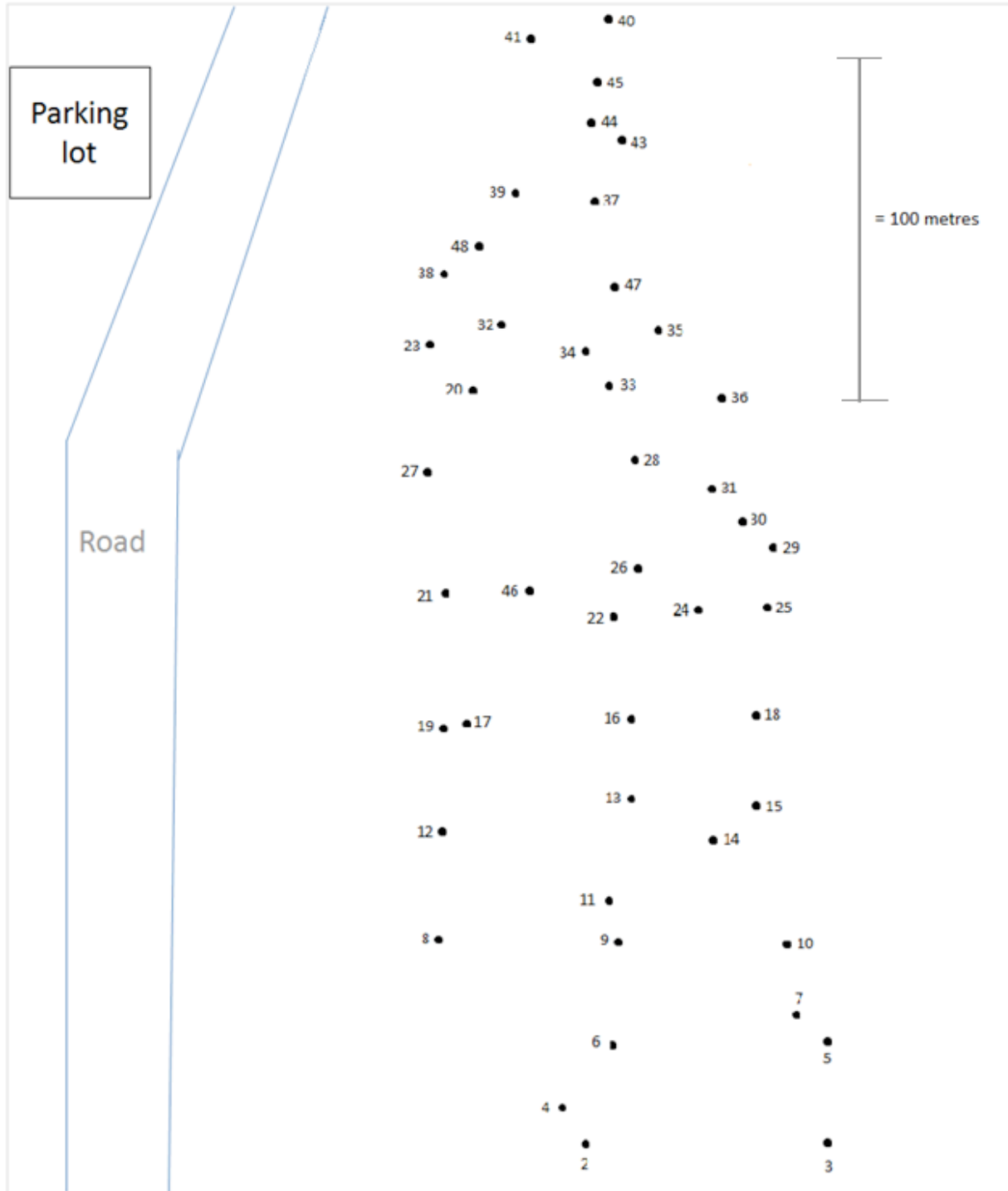


Figure 3. Layout of the next boxes in the parking lot grid near the Beaverhill Bird Observatory

Correlation between distances and return times to the nest

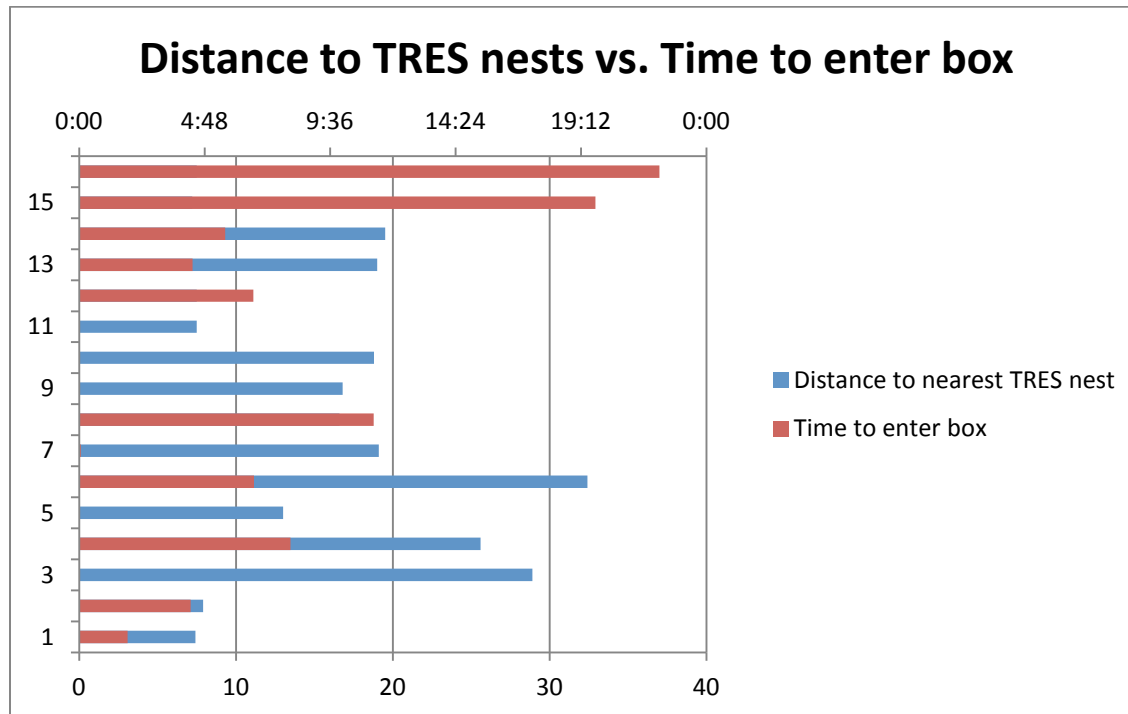


Figure 4. Distances between TRES nests (blue) and timing of adults to the nest (red)

Figure 4 shows that there was no direct correlation between the distances of the nearest nest box and the time it took for the adult to enter the nest box. As such there can be no correlation that the individuals that took longer to get to the nest box had a greater or shorter distance to their neighbours.

Some individuals took a long time to enter the nest box while others took only a few minutes. There was no correlation with either the distance to the nearest nest box or the density of neighbours in this regard.

Correlation between distances and reactions to foreign object

Although no obvious correlation between timing or proximity arose, there might be a correlation between distance to the nearest TRES nest and the reaction of individuals to the foreign object. The four boxes that had no entry occurrences (adults did not enter the nests) seem to correlate with shorter distances to neighbours. They each had aggressive reactions to the foreign object through intensive swooping of the rubber ducky in a group. Approximately 10-15 individuals were seen at the highest occurrence. None of the individuals touched the rubber ducky, but an excessive number of swoops (>40) was noted. It was also noted that these nest boxes were on average less than 15 metres away. It may be a group effort to deter a potential threat? Further research in this area may be required.

Although it seems that there is no obvious or direct correlation between distances and whether the adult enters the nest, there is also a possibility that it is related to positioning within the grid. There is also a possibility that it might be related to the age of the adults and whether they have had experience in the grid in the past. More research into these areas is also recommended.



Image 1. Adult swooping at the rubber ducky on top of nest box 32 at the start of the trial. This adult did not enter the box after 30 minutes.

Conclusion

Following the monitoring of Tree Swallow (*Tachycineta bicolor*) nest boxes at the Beaverhill Bird Observatory, it can be concluded that there is no direct correlation between the distance to nest boxes and the timing of adults returning to the nest.

Despite this, further research may be needed to determine whether there is a more direct correlation between behaviour towards a foreign object (i.e. swooping) and distance to neighbours. Also, more research can be done regarding the positioning of nests within the grid (edges vs. inner circle) and age of parents.

References

Beaverhill Bird Observatory. About the Beaverhill Bird Observatory. Information retrieved from <http://beaverhillbirds.com/about.php>

Golondrinas de las Americas map. 2011. Information retrieved from <http://golondrinas.cornell.edu/Maps/MapOfStudySites.html>

Personal communication. Amelie Roberto-Charron

TRES protocol sheet. 2013. Adapted from J. Rivers. Received May 16, 2013.