

An Analysis of Avian Caching Behavior in Urban Areas

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Introduction

Black-capped chickadees (*Poecile atricapillus*; family Paridae) are the most common feeder birds during the winter season in North America. Chickadees are known to forage on seeds and can memorize an impressive number of cache locations. In fact, the caching behavior of chickadees is essential to their survival.

The purpose of the research is to examine the proportion of seeds cached in urban areas, as very little is known about caching behaviour of chickadees in this type of habitat. The caching behavior of chickadees and its relationship to group size, age, and time of day will be analyzed, location types will also be noted. An early prediction is that as group size increases, caching will decrease due to cache theft¹.



Methodology

- I observed individually-marked chickadees taking sunflower seeds at feeders in urban settings.
- Fourteen seed-eating events were observed and timed. The sample mean was 47.1 seconds and standard error was 3.7 seconds. The range of the data was 50 seconds with a minimum of 30 seconds and maximum of 80 seconds. The time required to acquire the seed and completely eat the seed was measured to be at least 30 seconds. If the outcome of a feeding event was not observed but the chickadee grabbed another seed before 30 seconds, the event was assumed to be cached.
- I noted the identity of birds taking seeds, whether each seed was eaten or cached, and where it was cached.

Results

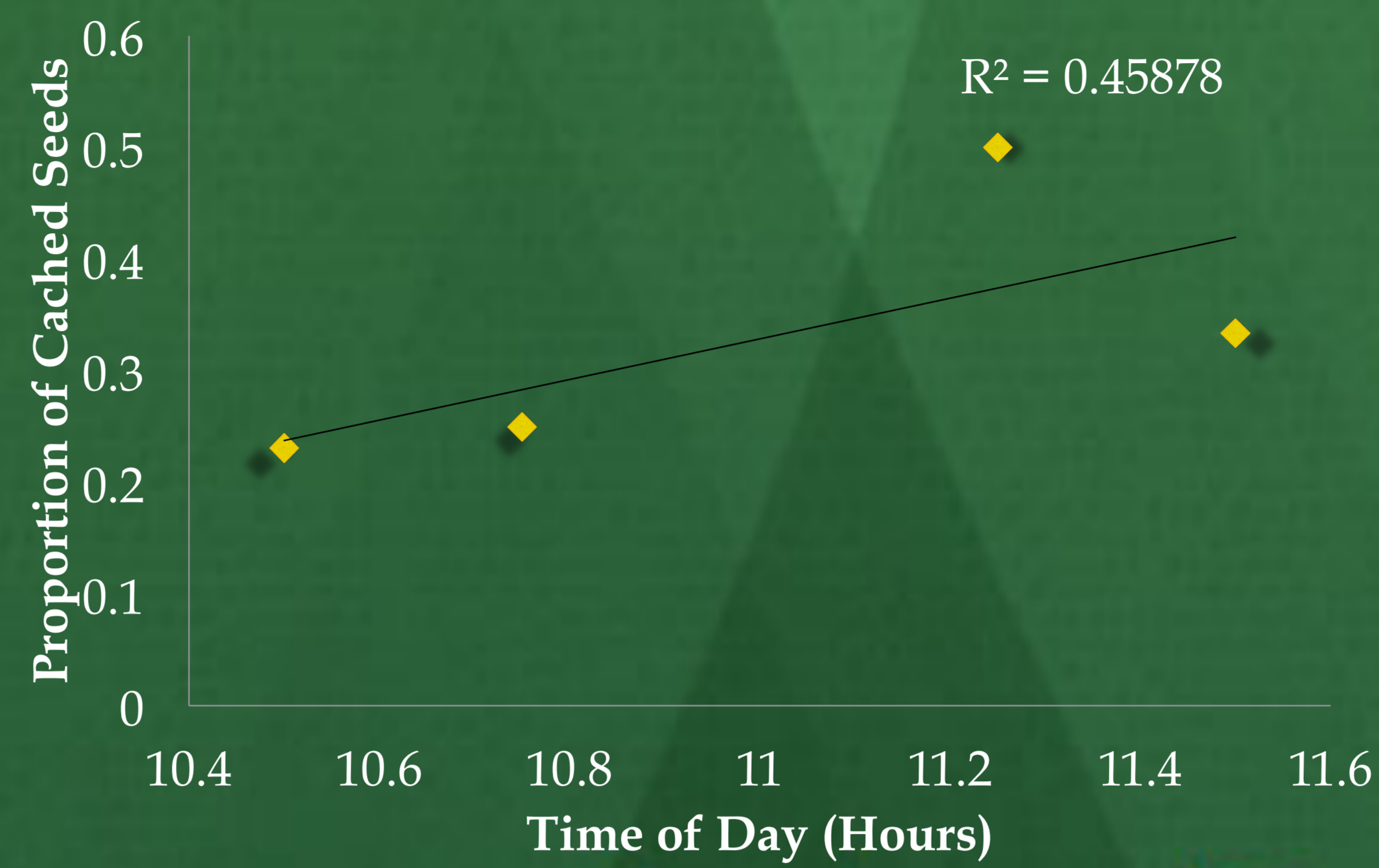


Figure 1: The proportion of seeds cached was calculated by dividing the number of seeds cached over total number of seeds cached or eaten. Time recorded was at the beginning of the observation session. A hypothesis test was performed using a linear regression of arcsine-transformed proportion of seeds cached against time of day ($F=1.9$; $d.f.=1,2$; $p=0.31$). All analyses were conducted in R.

Results

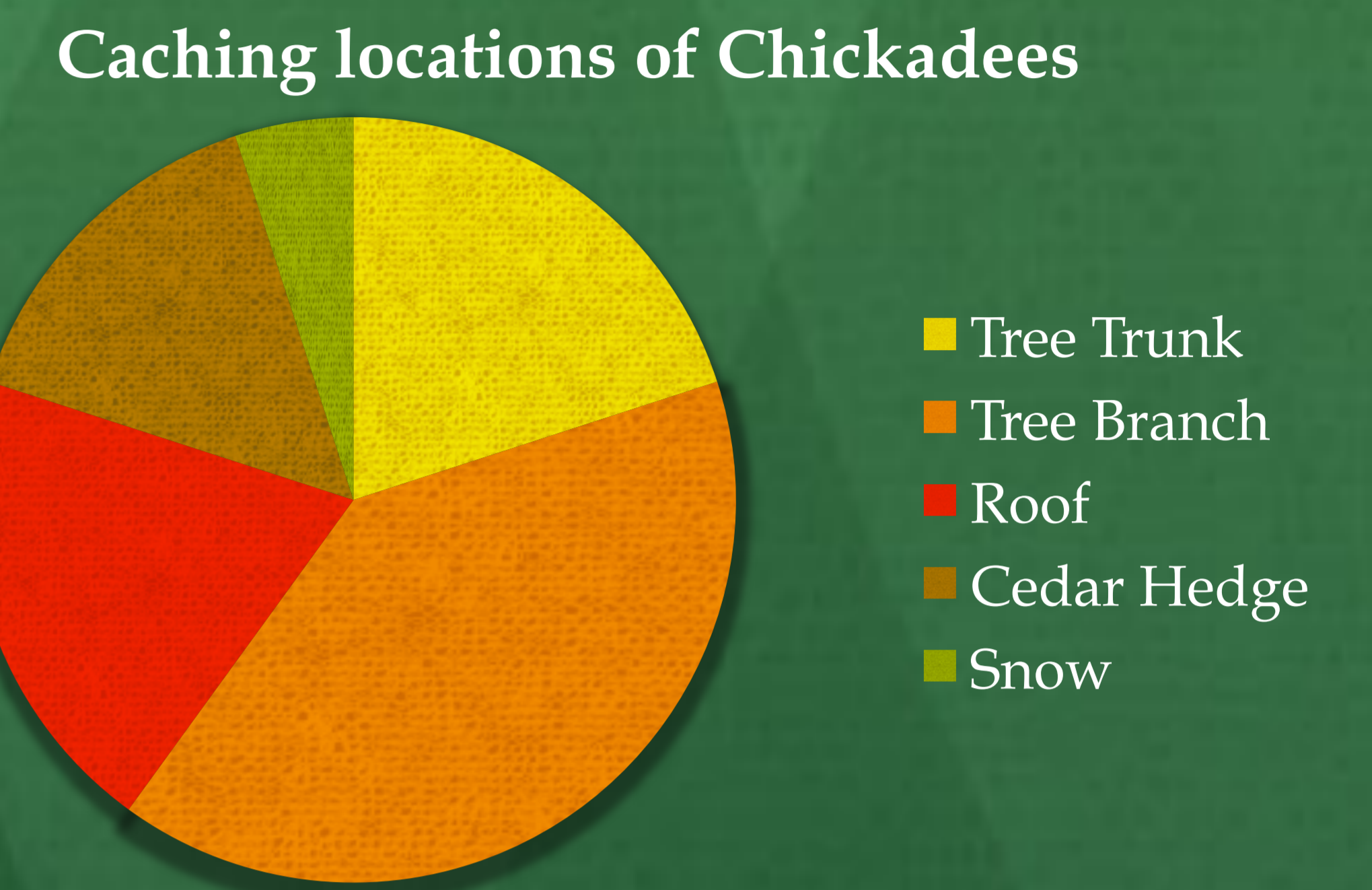


Figure 5: *Poecile atricapillus* caching locations and the proportion of seeds cached at each type of location. Total caching events $n=20$.

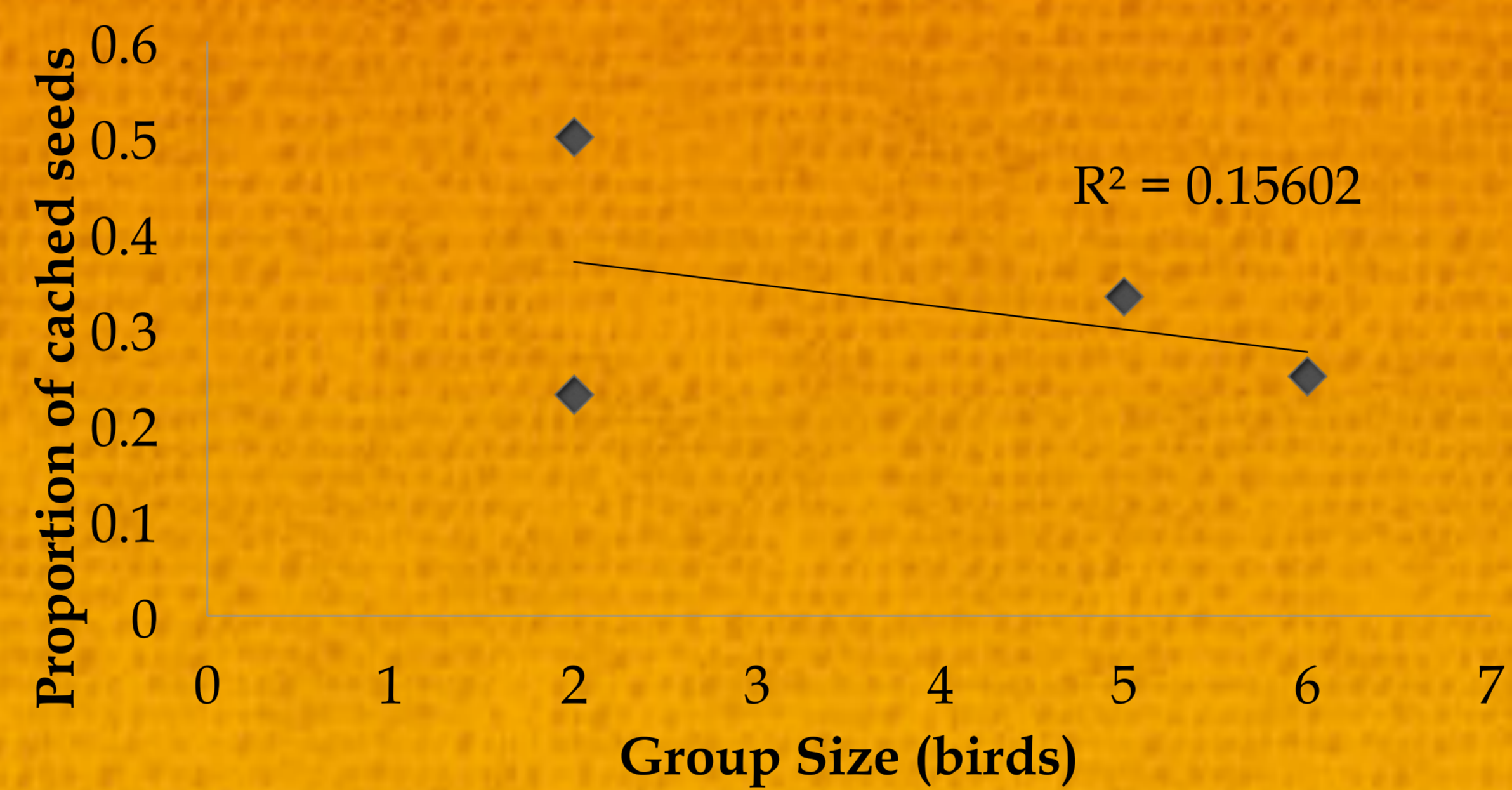


Figure 2: Group size was calculated by observing the number of different marked and unmarked individuals at the feeder during a session. A hypothesis test was performed using a linear regression of arcsine-transformed proportion of seeds cached against group size ($F=0.34$; $d.f.=1,2$; $p=0.62$).

Conclusion

In conclusion, from the data gathered, there was no statistically significant relationship between the proportion of seeds cached and time of day, group size and age of chickadees. However, this could be due to the small sample size, as birds were only present 50% of the visits. Future studies could benefit from collecting a larger number of observations.

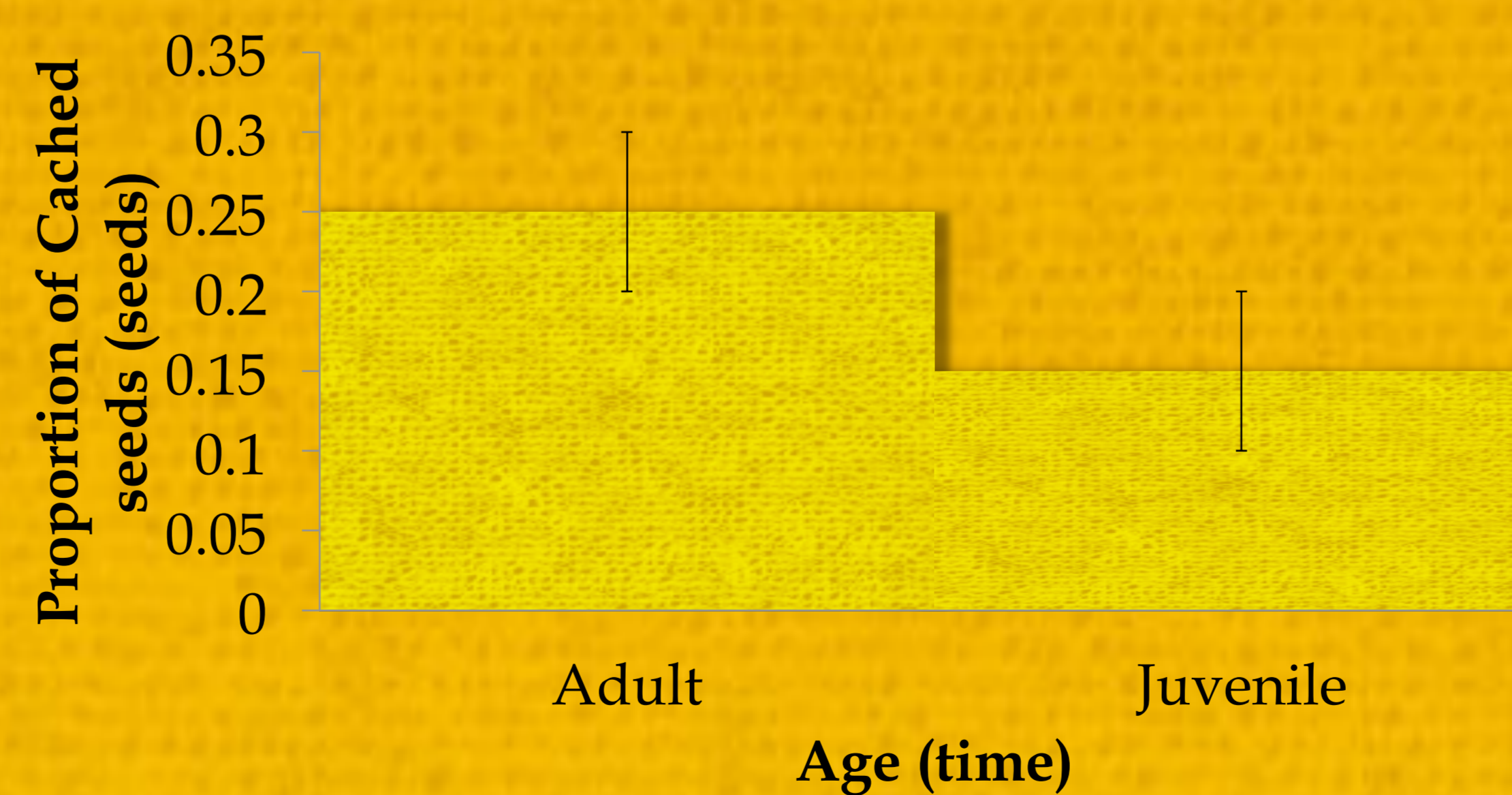


Figure 4: *Poecile atricapillus* age versus the proportion of seeds cached at urban sites. $F=0.22$. $t=0.83$, $df=3.93$, $p=0.45$

References and Acknowledgements

- V. V. Pravosudov et al 2010. *Animal Behaviour* 80, 175-80.

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