



# An Environmentally Friendly Way to Exclude Roly Polys

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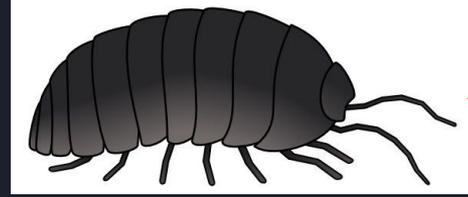
# My Statistically Significant Experiment! Abstract:

I put *Armadillidium vulgare* (rolly pollies) in a choice chamber with one side filled soil with eucalyptus oil and the other filled without oil.

There were 5 roly polies, each roly polly was put in a choice chamber for 10 minutes to see which side it would go to.

The data was then put in a table time spent deciding, time in soil with oil, time in soil without oil.

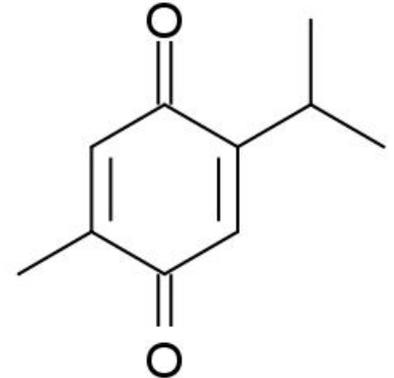
The objective of this experiment was to figure out if the eucalyptus oil can eliminate and/or remove roly pollies. It was to figure out if there was a healthier way to deter roly polies.



# Background

I chose this experiment because I wanted to see if there was an environmental friendly way to deter of unwanted insects. I choose eucalyptus oil because it has a strong aroma that is perceived as hazardous. They are also deadly to most bugs with a certain amount of exposure and it is healthy to the environment. The bugs die to the smell and to the compounds in the oil.

Many consumer products for insect repellents contain eucalyptus



Chemical Compound of eucalyptus oil



# Hypothesis → Experimental Design

Oil **does** have an effect on roly pollies on their **choice** of habitat. The the **number of seconds** roly pollies spend on the no oil side **will not be less than** the number seconds they spend on the oil side.



Research question: Does Eucalyptus oil repel Rollie pollies?

Independent variable: Eucalyptus Oil

Number of treatments for independent variable? 2 (No oil & oil)

Dependent variable: Amount of time spent in each treatment

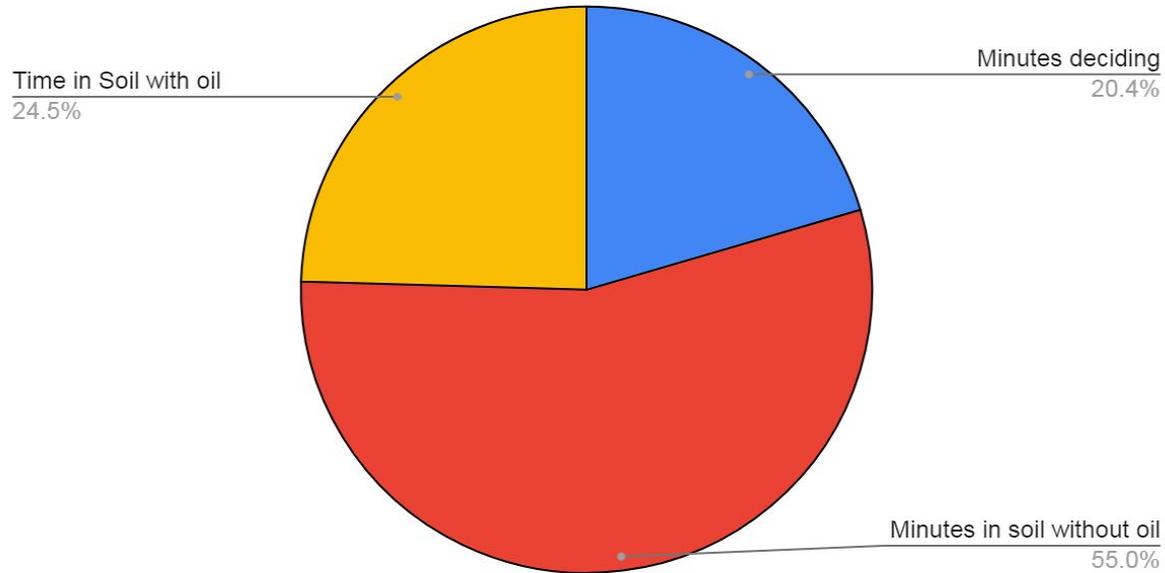
Unit to measure dependent variable: Seconds

Sample size: (n=5)

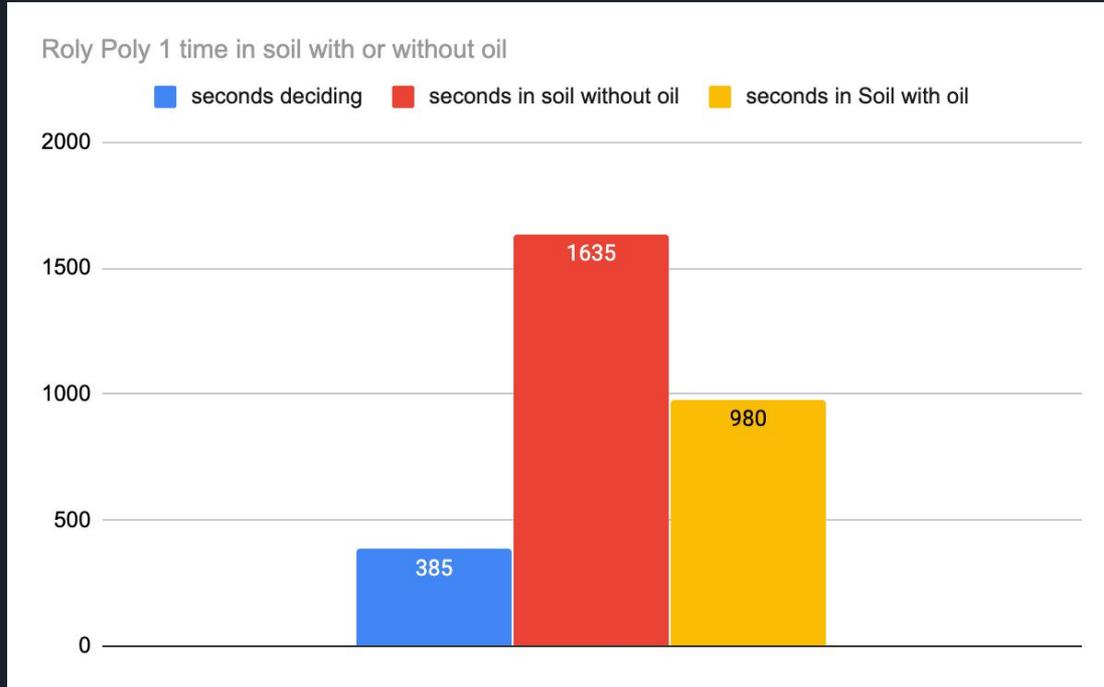
# Overall Results

## Time Roly poly in soil with or without oil

Minutes deciding, minutes in soil with oil, minutes in soil without oil

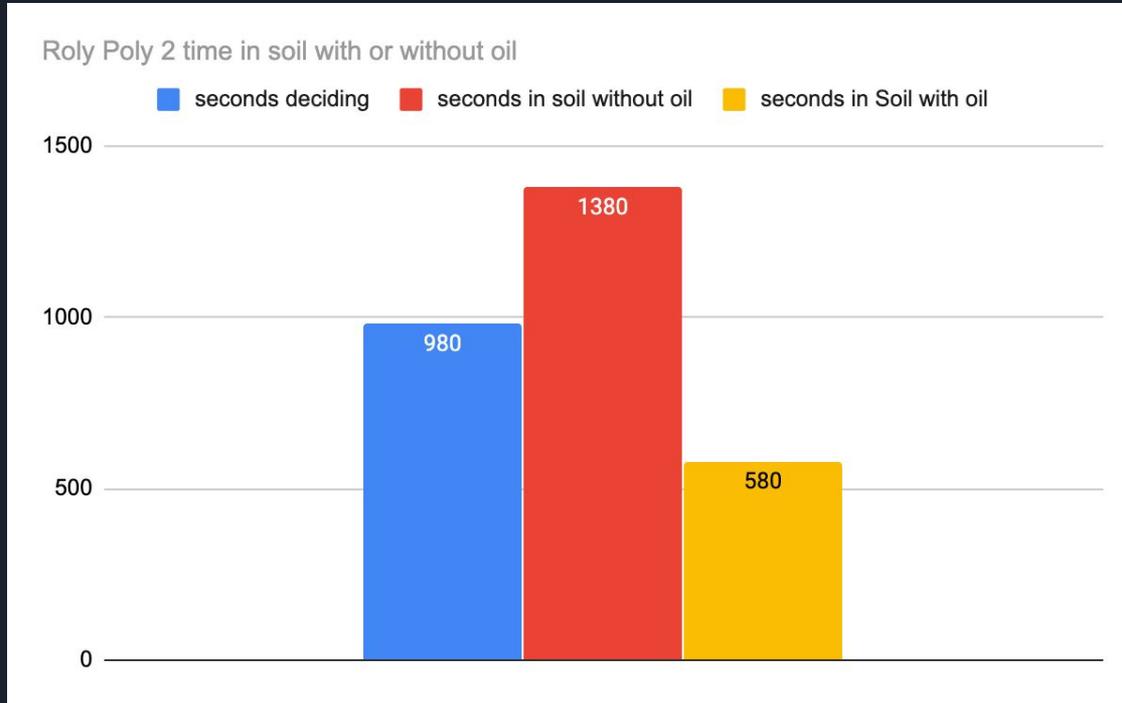


# Individual Rollie Pollie Results: Specimen 1



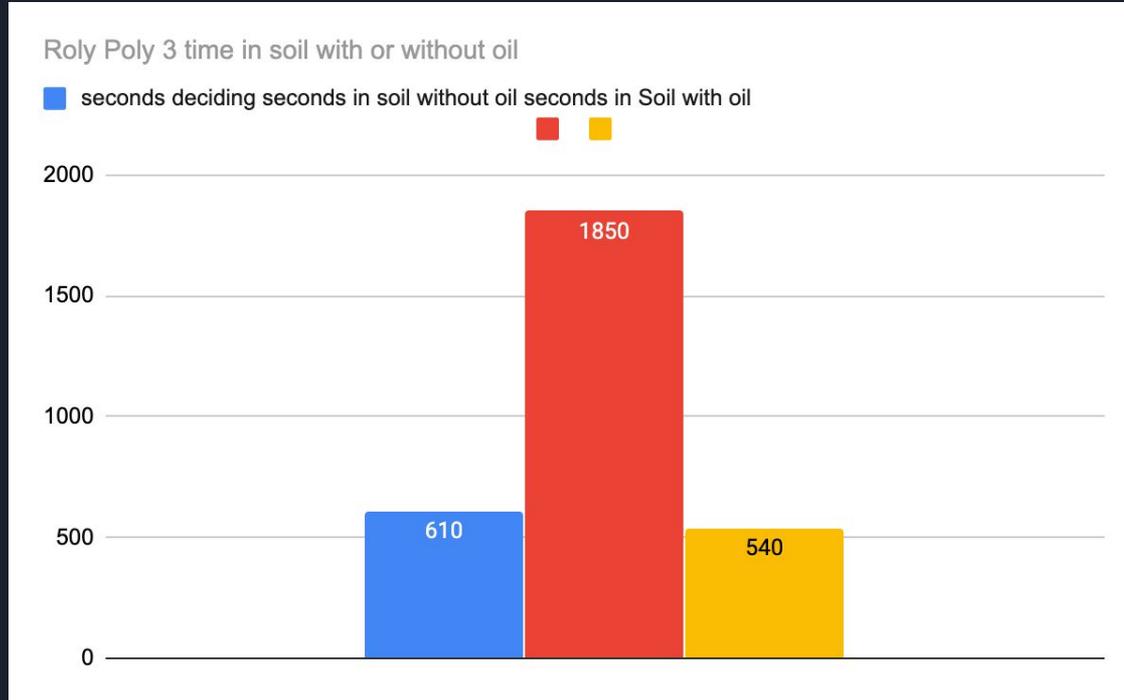
The first Rollie Pollie, in total of 5 trials, spent 1635 seconds in soil without oil, 980 seconds in soil with oil. This rollie pollie spent most of its time in soil without oil.

# Individual Rollie Pollie Results: Specimen 2



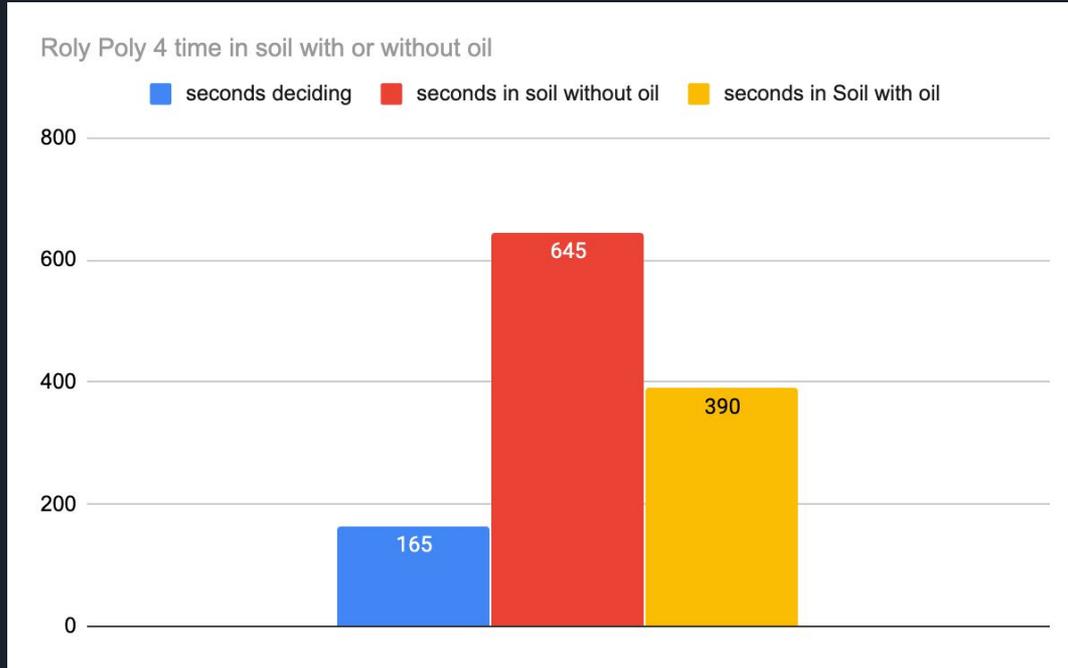
The second Rollie Pollie, in total of 5 trials, spent 1380 seconds in soil without oil, 580 seconds in soil with oil. This rollie pollie spent most of its time in soil without oil.

# Individual Rollie Pollie Results: Specimen 3



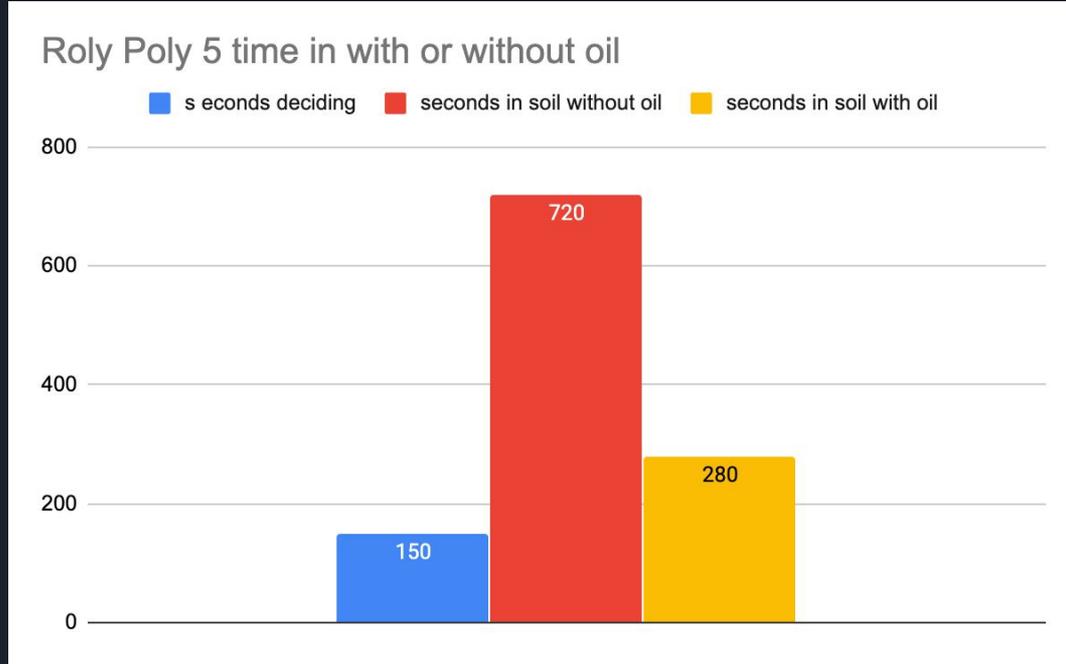
The third Rollie Pollie, in total of 5 trials, spent 1850 seconds in soil without oil, 540 seconds in soil with oil. This rollie pollie spent most of its time in soil without oil.

# Individual Rollie Pollie Results: Specimen 4



The fourth Rollie Pollie, in total of 3 trials, spent 645 seconds in soil without oil, 390 seconds in soil with oil. This rollie pollie spent most of its time in soil without oil.

# Individual Rollie Pollie Results: Specimen 5



The fifth Rollie Pollie, in total of 3 trials, spent 720 seconds in soil without oil, 280 seconds in soil with oil. This rollie pollie spent most of its time in soil without oil.



# T-Tests! Statistical Method in Biological Sciences

T test will tell the differences between the # of seconds spent in the oil or no oil are by chance or that there is a true effect that can assume what will happen in the entire population of roly polys.

In most biological sciences, we set a probability of 0.05. Meaning that if there is less than a 5% probability that my result is by chance, then I can reject the  $H_0$ : that says that there is not an effect.

# Raw Data Results → Paired T-Test → Conclusion

A	B	C
Roly Poly Raw Data		
Roly Poly 1	No Oil	Oil
	480	0
	0	420
	570	0
	540	0
	0	560
sum	1590	980
Roly Poly 2		
	180	0
	480	0
	240	0
	480	0
	0	580
sum	1380	580
Roly Poly 3		
	0	540
	480	0
	210	0
	570	0
	590	0
sum	1850	540
Roly Poly 4		
	240	300
	405	90
sum	645	390
Roly Poly 5		
	180	280
	570	0
sum	720	280



I conclude that rollie pollies prefer soil without oil because they spent more time in soil without oil than in soil with oil, as shown by the results of a paired t-test. I concluded that these results were more than chance. It had an effect.



## NEXT STEPS

- More trials
  - More rollie pollies
- Treat soil with oil every trial
- Multiple rollie pollies at one time



# Acknowledgements and Sources

<https://homeguides.sfgate.com/eucalyptus-uses-getting-rid-pests-83027.html>