

Part 4

1. The article generally talked about how the parasite is impacting New England Cottontails rabbits. The researchers were curious as to why the population of New England Cottontails are declining. Researchers made the hypothesis that the parasites impact the population of New England Cottontails rabbits. So the researchers researched in 9 different sites in the valley in New York. They catch the rabbits every 2-5 days for 3 months. They found at least one species of parasite from the 292 of the 320 rabbits. So based on these results, my hypothesis would be that if gastrointestinal parasite problems in New England Cottontails continue, then they will eventually become extinct. As a critique, there will be no bias present from the observer because the data will be created scientifically.

Whipps, C. M., Gavard, E. J., Cohen, J., & Ryan, S. J. (2019). Gastrointestinal parasites of the New England cottontail rabbit (*Sylvilagus transitionalis*) and eastern cottontail rabbit (*Sylvilagus floridanus*) in the Hudson Valley, New York. *Parasitology Research* (1987), 118(7), 2257–2262. <https://doi.org/10.1007/s00436-019-06351-5>

2. Many researchers made the hypothesis that the population of New England Cottontails rabbits are declining because their habits are changing. Humans require so many trees in their lives and in order to get the trees, they need to clear cutting blocks of forests. Clear cutting blocks of forests make a lot of changes. Houses for animals, foods, and more. My hypothesis is if clear cutting blocks of forest continues by humans, then New England Cottontails will lose their spots for living and lead to their loss of an early successional habitat. This experiment could have a randomisation for the critique, because although populations change we never know the actual reason. It could be the parasite just like the previous paragraph.

Buffum, B., McGreevy, J., Gottfried, A. E., Sullivan, M. E., & Husband, T. P. (2015). An Analysis of Overstory Tree Canopy Cover in Sites Occupied by Native and Introduced Cottontails in the Northeastern United States with Recommendations for Habitat Management for New England Cottontail. *PloS One*, 10(8), e0135067–e0135067. <https://doi.org/10.1371/journal.pone.0135067>

3. I chose this article because this article could have connection with the previous paragraph, although it is a different article. The researchers in the article made the hypothesis that if we restore the areas in New England back to the forest, then we could have more New England Cottontails rabbits. My hypothesis was if New England keeps their work focused on restoration areas and habitat for New England cottontails rabbits, then New England Cottontails rabbits population will recover. As a critique, this

experiment could have an external validity because the findings of a study can relate to the other settings like in New York.

Bauer, M. L. (2018). *Assessing the Effects of Habitat Restoration on Shrubland Specialists: Case Study on the New England Cottontail and Shrubland Birds*. ProQuest Dissertations Publishing.

4. Population of New England Cottontail rabbits is definitely declining and this article tries to analyze why. The hypothesis from the researchers is that if we try to do the assessment of alternative sampling designs for range-wide monitoring of New England Cottontail rabbits, we will be able to find why population is declining. Even in fact, if we could keep monitoring, we might be able to find more data about New England Cottontail rabbits and many fields. My hypothesis was also similar, if the data gathering from the different sites continue, then we will be able to find the accurate reason of why the population of New England cottontail rabbits decrease. The researcher researched by catching random rabbits in wild, so this study would have randomisation as a critique.

Rittenhouse, C. D., & Kovach, A. I. (2020). Assessment of Alternative Sampling Designs for Range-wide Monitoring of New England Cottontail. *Wildlife Society Bulletin (2011)*, 44(4), 798–806. <https://doi.org/10.1002/wsb.1140>

5. In this article, researchers find another possibility of why the population of New England Cottontails rabbits is declining. Researchers hypothesis was a purported case of female-biased sexual size dimorphism, for evolutionary correlations among species between SSD, body-size, and life-history variables. The female rabbits are getting bigger than the male rabbits, and also the populations of female rabbits are getting bigger and bigger, it is very hard for rabbits for reproduction. My hypothesis from this research was if this unproportional rate between male rabbits and female rabbits continues, then the rabbits will have less reproduction which will cause an extinction. As a critique, this could have some observer bias because we don't actually know the number that we consider as "bigger". The size of male rabbits already varies so we don't know how we should compare.

DAVIS, C. M., & ROTH, V. L. (2008). evolution of sexual size dimorphism in cottontail rabbits (*Sylvilagus*, Leporidae). *Biological Journal of the Linnean Society*, 95(1), 141–156. <https://doi.org/10.1111/j.1095-8312.2008.01035.x>

Part 5

The selected hypothesis was if gastrointestinal parasite problems in New England Cottontails rabbits continue, then they will eventually become extinct. We can find two types of

methods in this research, first is repeated measures design. The research design according to this hypothesis is that all participants are exposed to all levels of the independent variable, time. Results are compared before and after exposure to the independent variable, or in this case, the amount of time that has passed. We also need repeated measures design because we must test to see if rabbit population consistently goes down over a long period of time while testing that the gastrointestinal parasite positive rate is the same in order to prove the hypothesis is correct. So to answer our selected hypothesis, we will need to design two separated types of research. Answering some questions about the type of research, we will try not to have any intervention to the wild and rabbits but we will need to since we need to catch the wild rabbits. It is something that we can't avoid to get accurate data. However, I think it is good to have some randomisation to see the parasite in each rabbit. However, we will not have any interrupted time-series designs because they are all part of wildness so we will research over time without any interruption.