

Do Wildfires in Arizona Cause Amphibian Abundance to decrease

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ABS 472 Applied Herpetology

Introduction and Objectives

In Arizona we get a lot of wildfires due to our dry climate. It makes you wonder, what happens to the abundance of those creatures habituating the areas in which these wildfires occur? In an article by Blake Hossack, he explains how wildfires are only supposed to become more prevalent and further effect sensitive groups. In another article years later, the same author explains how effects of a wildfire will not affect most healthy populations. Looking at the data, it was completely scattered on whether there was an effect or not.

I hypothesize that the wildfires that occur in southeastern Arizona cause our amphibians abundance to decrease because of wildfires destroying or changing their living area. The null hypothesis would be that the wildfires do not change the abundance of amphibians.

Methods

I compared the abundance of amphibians in southeastern Arizona at the time in which wildfires burned. The dark red indicates fires that burned last year, and light reds burned 2-14 years ago.

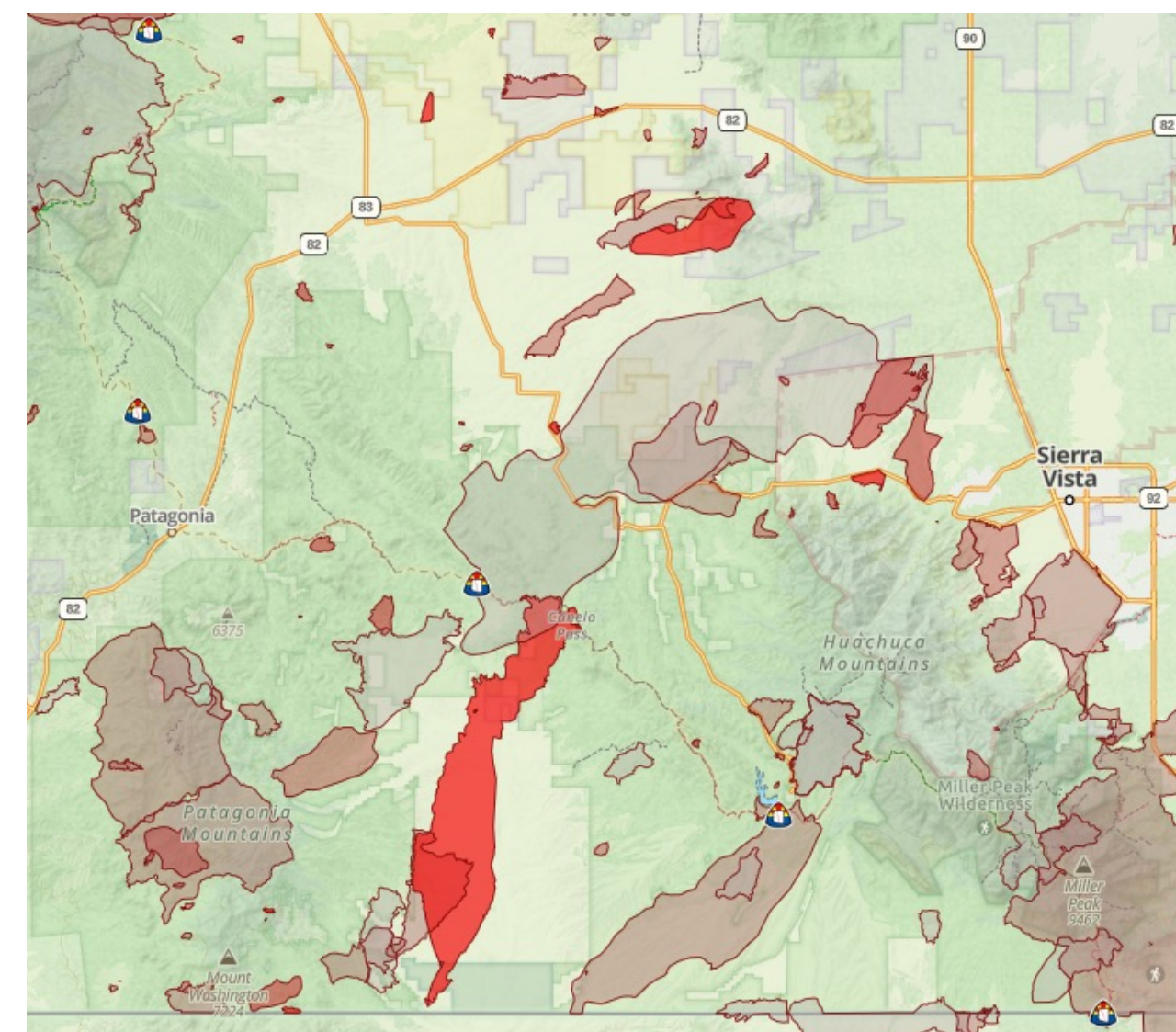
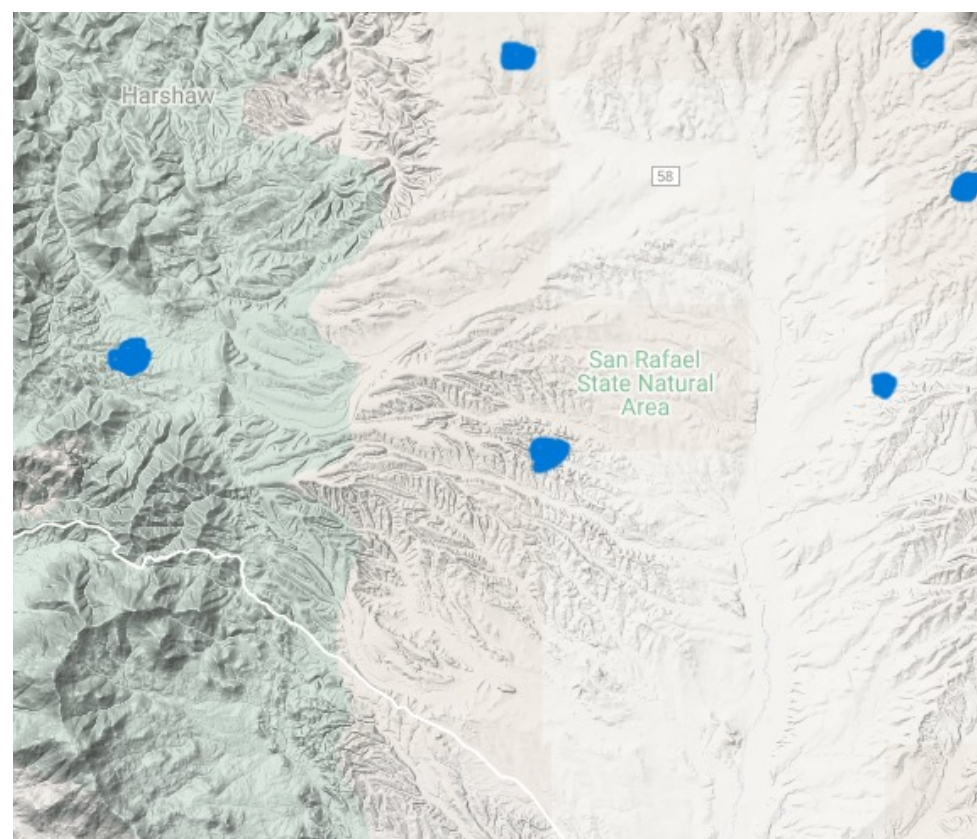
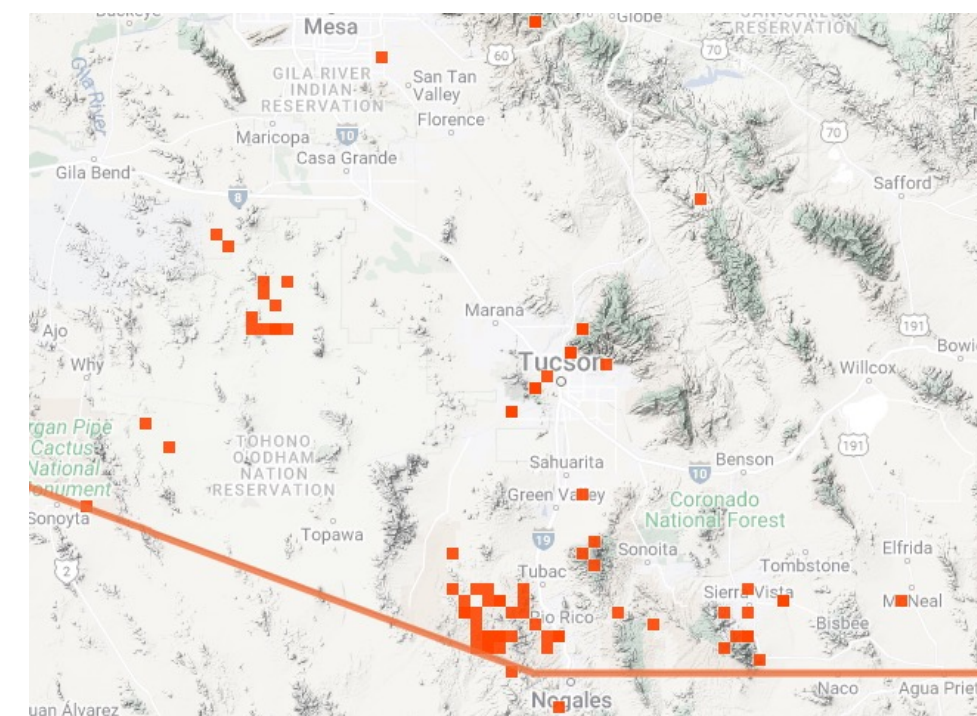


Fig 1. "Topo Maps, Trail maps and Satellite Imagery" – Gaiagps.com



Mean (average number of amphibian posts on iNaturalist) = 2.357143
Standard Deviation = 2.124925
Standard Error = 0.15178

Fig 2 & 3. Screenshot from iNaturalist showing the amphibian abundance in 2009 during the Lochiel fire and the bottom is 2022 during the San Rafael fire. Blue and Orange dots indicate amphibian sightings.

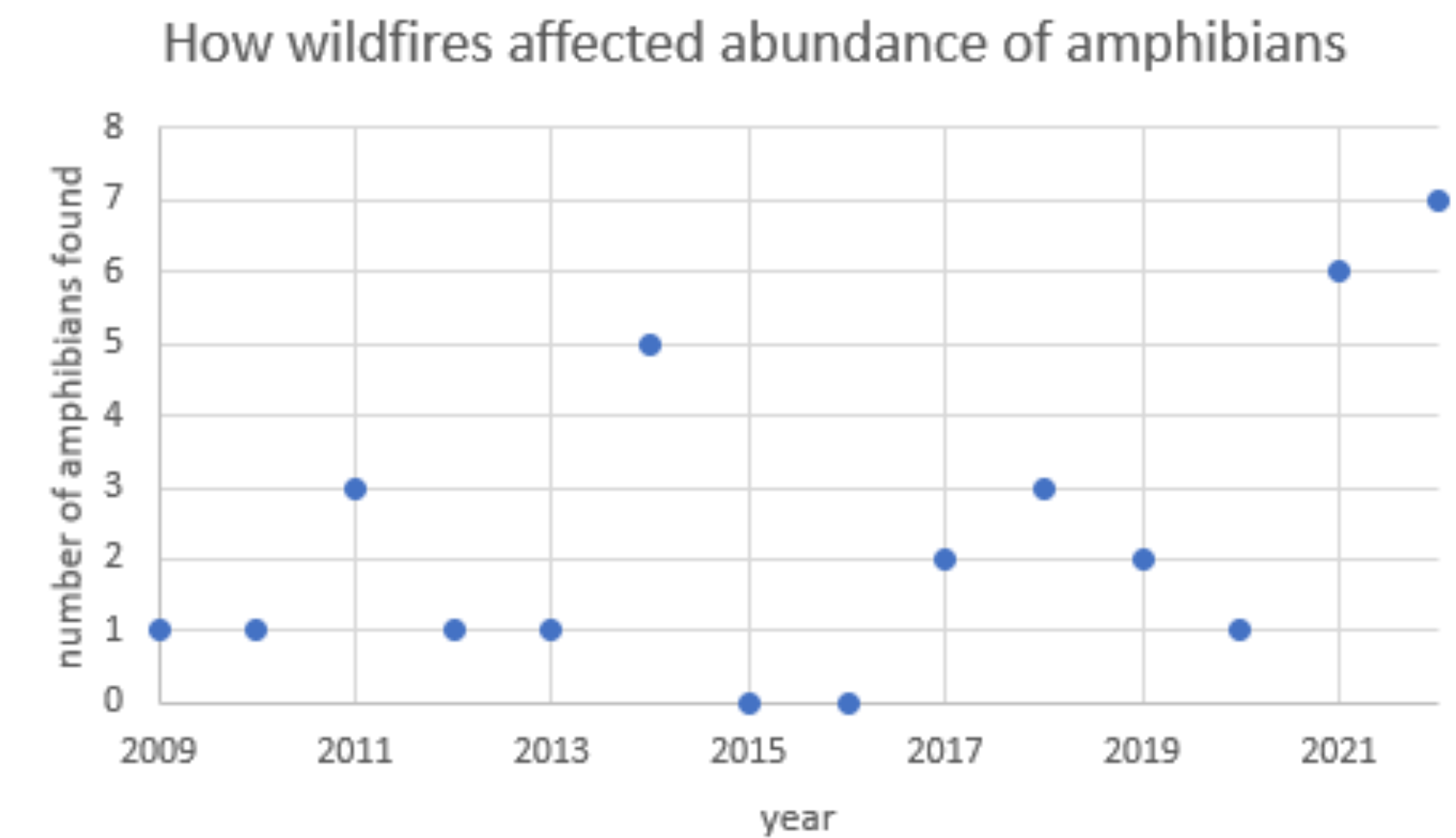
I went year by year on iNaturalist to see the amphibian abundance from the year 2009 to 2022 and took note of how many amphibians sightings were made. It resulted in the graph I have above. The graph is all over the place and there is no decrease in amphibian sightings during the times in which a fire burned which where the years 2009, 2011, and 2022.

The red spotted toad was one of the most common amphibians coming up year after year on iNaturalist.

Photo from: nps.gov

Results

Results



Conclusions

My hypothesis was incorrect, the wildfires had no impact on the abundance of amphibians in southeastern Arizona.

Literature Cited & Acknowledgements

"iNaturalist." *iNaturalist*, www.inaturalist.org/. Accessed 26 Oct. 2023.

"Topo Maps, Trail Maps, and Satellite Imagery." *Gaiagps.Com*, www.gaiagps.com/map/?loc=12.7%2F-110.6303%2F31.3715&layer=usfires. Accessed 26 Oct. 2023.

Hossack, B. R., & Pilliod, D. S. (2011). Amphibian responses to wildfire in the Western United States: Emerging patterns from short-term studies. *Fire Ecology*, 7(2), 129–144. <https://doi.org/10.4996/fireecology.0702129>

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