House Hunting: Harvester ant (Pogonomyrmex sp.) colonies in an urban gradient
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Methods

Intramural Colonies
- A week in January 2020 was dedicated to surveying the UTRGV Edinburg campus for harvester ant colonies. Their coordinates were documented and saved to excel. Colonies located within and around the intramural fields, which will further be referred to as intramural colonies, were isolated for the study on colony dispersement in the intramural fields.

Soil Moisture
- In the Fall of 2021, soil moisture samples (n=22) were taken at the intramural fields, spaced 50m apart from one another. Three measurements were taken and averaged per sample. These measurements were taken and used to predict the soil moisture values of the surrounding area using kriging.

- The kriging map was exported as a raster and using the extract by circle tool at a radius of 5m and 70m and averaged at both radii.

Road Proximity
- To determine each colonies proximity to the nearest road, a line shapefile was created to represent the roads surrounding the intramural fields. This shapefile was inputted into the Near tool. The near tool calculates the distance and additional proximity information between the input features and the closest feature in another feature class. In this case the point to line was used (Fig 1.).

Results
- The intramural fields had a predicted soil moisture range of 17 to 34%. Around 47% of the intramural colonies were found to be established in a range between 28-28.5%. (Fig. 2b)
- Of the intramural colonies, 48% were situated within 10m of a road, the farthest available point within the intramural fields was ~140m. The farthest colony to the road was ~70m away. (Fig. 2a)
- 47% of the intramural colonies have an area of pervious material above 80%, while less than 23% have an area of pervious material above 70%
- 90% of the colonies were located at an elevation range of 28.5-30 m.

Discussion
- Colonies in the area of interest situated themselves near roads, and mostly situated themselves at an elevations between 28.5-30m and soil moisture levels of 28-28.5% VMC.
- Further soil moisture data needs to be collected given the fields are regularly watered in different sections at different times of the week. An option for more accurate elevation measurements is to use a handheld GPS device to calculate colony elevation as well as grid measurements surrounding them to predict the surrounding elevation more accurately than the USGS 1mx1m resolution file.