Pickleweed and Nutrients, what's going on ?

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Introduction

- Along the ecotone, we collected several soil samples from different locations which we tested.
- Our seven sites all had different types of plants but the main ones we saw were Pickleweed, Alkali Heath, and Poison Hemlock.
- Pickleweed is a native plant and dominant species which is why we were interested in this plant that inhabits most of Elkhorn Slough.
- We performed 4 tests on each of the soil samples that we collected and tested for: (NPK) Nitrates, Phosphates, Potassium, and pH.
- **Testable question:** How do the primary nutrients such as Nitrogen, Phosphorus, Potassium(NPK), and pH change based on the abundance of pickleweed?
- Hypothesis- we expected the nutrients to have a bigger difference in the pickleweed and not in the uplands.

Yanely and Crystal collecting soil samples(Photo cred. Alex)

Pickleweed with parasitic dodderPhoto cred. Yanely)

Methods

- Lay down a transect at the site begin collecting soil.
- Use the auger to extract the soil once at each site.
- Place all soil samples on a gutter and seperate into a soil horizon (different soil characteristics).
- Bag and label the samples.
- After returning from our sites, wet samples needed to be dried in an incubator and then smashed.
- Once all soil samples are dried and ready, testing for NPK and pH can begin using our LaMotte and the GLOBE protocol.

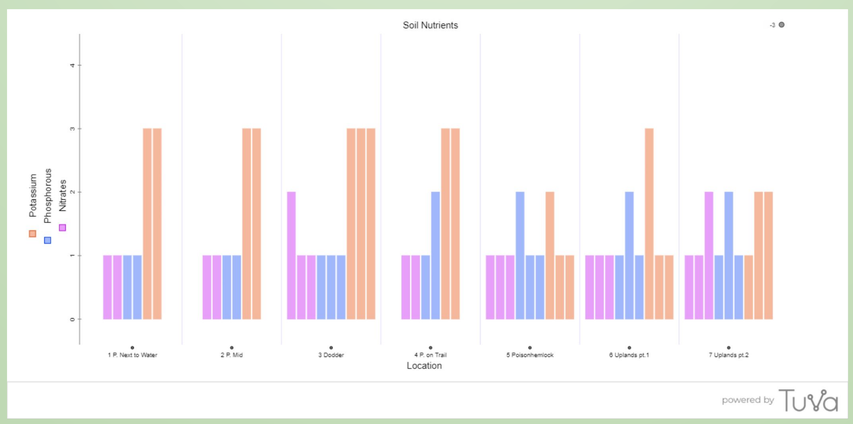
Salty Pickles!!!(Photo cred. Paloma)

Results

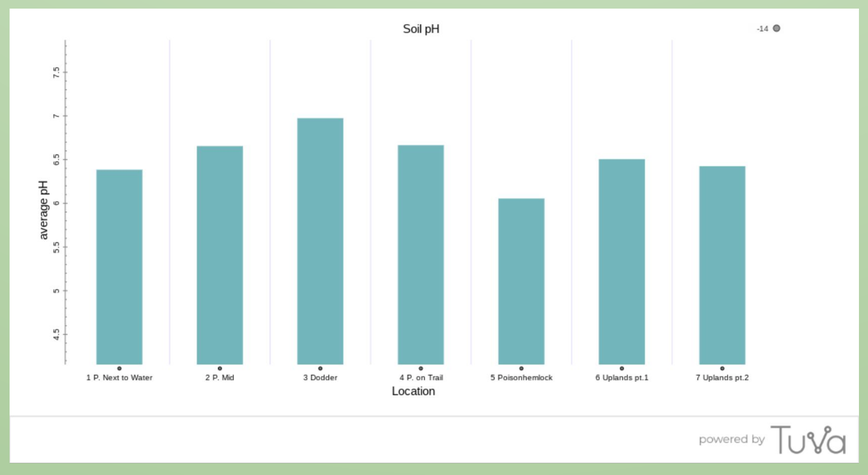
- Our results table shows that the potassium had the most obvious change in the pickleweed.
- The remaining nutrients we tested for didn't show a large difference in our data.

Location	Distance on transects	Date	Nitrates	Phosphorous	Potassium	pH
7 Uplands pt.2	150 ft 6 in	10/25/19	1	1	1	7
6 Uplands pt.1	142ft 6in	10/18/19	1	1	3	6
5 Poisonhemlock	109ft 8in	10/25/19	1	2	2	6
4 P. on Trail	96ft	10/25/19				
3 Dodder	81 ft	10/25/19	2	1	3	7
2 P. Mid	41 ft	10/18/19				
1 P. Next to Water	3 ft	10/18/19				
7 Uplands pt.2	150 ft 6 in	11/15/19	1	2	2	7
6 Uplands pt.1	142ft 6in	11/15/19	1	2	1	7
5 Poisonhemlock	109ft 8in	11/15/19	1	1	1	6
4 P. on Trail	96ft	11/15/19	1	1	3	7
3 Dodder	81 ft	11/15/19	1	1	3	7
2 P. Mid	41 ft	11/15/19	1	1	3	7
1 P. Next to Water	3 ft	11/15/19	1	1	3	7
7 Uplands pt.2	150 ft 6 in	11/22/19	2	1	2	6
6 Uplands pt.1	142ft 6in	11/22/19	1	1	1	7
5 Poisonhemlock	109ft 8in	11/22/19	1	1	1	6
4 P. on Trail	96ft	11/22/19	1	2	3	7
3 Dodder	81 ft	11/22/19	1	1	3	6
2 P. Mid	41 ft	11/22/19	1	1	3	6
1 P. Next to Water	3ft	11/22/19	1	1	3	6

Data table results (Different colors in the location separate the dates and sites collected the order is from the the land to the water.)The empty yellow highlighted rows are missing data due to errors from our first protocol.)



NPK results from water to the uplands all three days



Average pH data results

Our last test to complete (Photo cred. Crystal)

Discussion

- Our results for our testable question were not what we expected them to be, we expected the nutrients to have a bigger difference in the pickleweed and not in the uplands.
- If we had more time in class and in the field we could have done a soil profile that would help us determine the different types of soils in our sites.
- Our results show higher levels of potassium throughout all sites except for our upland and poison hemlock locations in comparison with our other two nutrients. This could be because of possible run-off from rainy days. However, The pH of our soil was fairly acidic, which is less ideal for any presence of Nitrogen or Potassium but is more possible for Phosphorus.
- Unfortunately we have inconclusive data because we do not have a complete data set. We didn't have enough data because we were trying different protocols.

The incubator(Photo cred. Crystal)

Soil in the uplands(Photo cred. Yanely)

Pickleweed Soil(Clay)Photo cred.Anais

Dodder on Pickleweed(Photo cred. Crystal)

The horizons of the soils(Photo cred. Crystal)

These are our 7 sites on google maps

Salty Pickles at location site (Photo cred Anais)

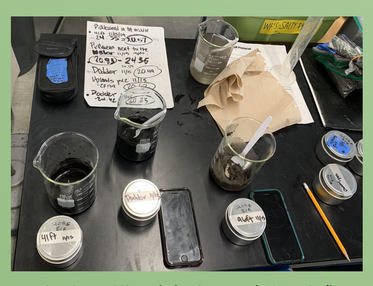
Crystal Salázar-Nieto sieving the soil to being the pH protocol(Photo cred. Monica)

Yanely Gonzalez extracting the nutrients from the soil (Photo Cred. Crystal)

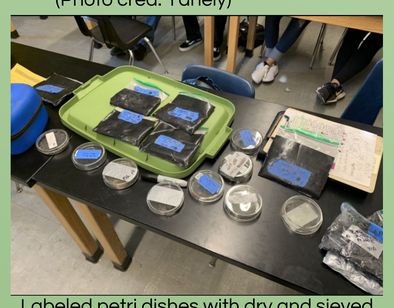
LaMotte Soil Kit (Photo cred. Crystal)

Alejandro González pouring the extraction into test tube (Photo cred. Yanely)

Alex using the Auger (Photo cred. Yanely)



pH tests setting (Photo cred. Crystal)



Labeled petri dishes with dry and sieved soil in plastic ziplock bags(Photo cred. Crystal)

Literature Cited

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