Effect of water availability in assemblage of gypsophilous plant communities from the Potosinian Highland, Mexico

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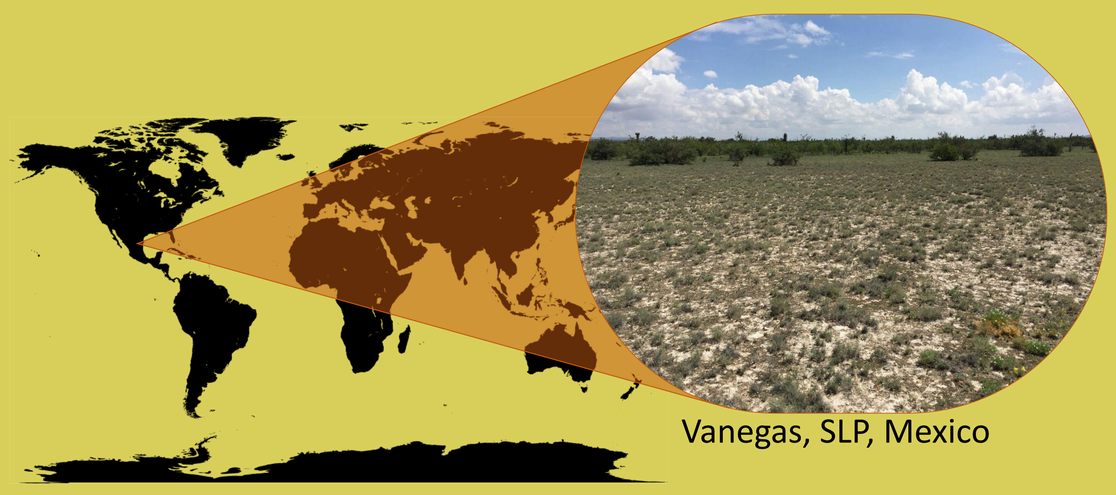
Gypsum ecosystems in Mexico



Vanegas, SLP, Mexico

Gypsum ecosystems in Mexico are important hotspots of biodiversity and endemic species, however, studies in these zones are scarce. The development of plant communities in this ecosystems may be determinated by both biotic and abiotic factors [1]. Water represents a key factor for community assemblage, as demonstrated by different authors [2,3,4].

Objective

To known the water availability effect as a driver on final assemblage (composition, diversity and species richness) of the gypsophile community of the Mexican Potosinian Highland.

How was it evaluated?

1

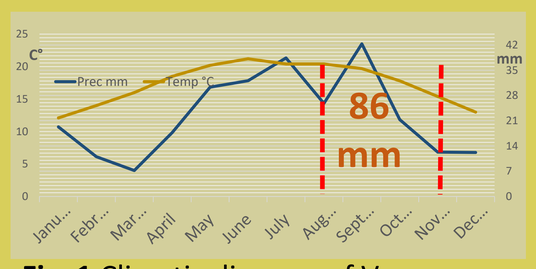


Fig. 1 Climatic diagram of Vanegas, Mexico

Table 1. Water treatments acording to climatic data in field

Water treatments	Treat 1	Treat 2	Treat 3
Precipitation in experiment	270 mm	135 mm	67.5 mm

X 3 water availability in field

2

90 samples: 30 cm diameter and 5 cm deep

3

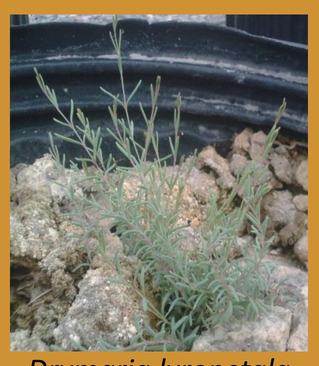
30 experimental units for each treatment
Period of experiment: **August-november**

4

Measurements

Richness	$\frac{1}{(\sum Pi^2)}$ Simpson inverse	Multivariate analysis	PERMANOVA SIMPER NMDS	Vegan Agricolae

Nama stevensii



Drymaria lyropetala

Sartwellia mexicana

Nerisyrenia camporum

Bouchetia arniatera

Oenothera pubescens

Table 2. Total and mean registered plants in the different treatments

Treatment	Total plants	Mean plants	
1	307	10.2	**a**
2	50	1.7	**b**
3	0	0	**b**

Results obtained by ANOVA and Tukey test. Different letters indicate significant differences.

Table 3. Mean richness and diversity registered in the different treatments

Treatment	Mean richness		Mean diversity	
1	2.2	**a**	1.47	**a**
2	1.1	**b**	1.04	**b**
3	0	**c**	-	

Results obtained by GLM for richness and Wilcoxon test for diversity. Different letters indicate significant differences.

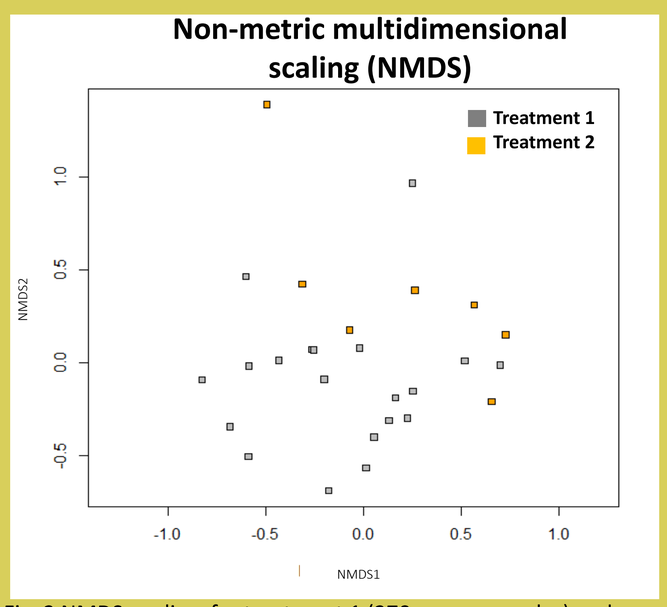


Fig. 2 NMDS analisys for treatment 1 (270 mm, gray color) and treatment 2 (135 mm, color orange color).

Table 4. Permutational multivariate analysis of variance (PERMANOVA)

	R^2	p value
Treatment	0.15	0.0031
Residuals	0.84	

Table 5. Similarity percentage analysis (SIMPER)

	Contribution	p value
Nama stevensii	**0.4260**	**0.0009**
Sartwellia mexicana	0.6137	0.2762
Nerisyrenia camporum	0.7596	0.1844
Bouchetia arniatera	0.8553	0.4846
Oenothera pubescens	0.9396	0.6250
Drymaria lyropetala	1.0000	0.0810

What can we conclude?

In this study was observed that water had a significant effect on the community composition and structure (richness and diversity), therefore it is considered as a determinant factor for its assemblage.

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