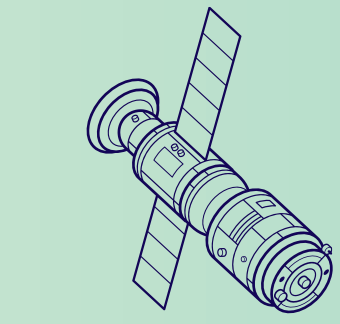
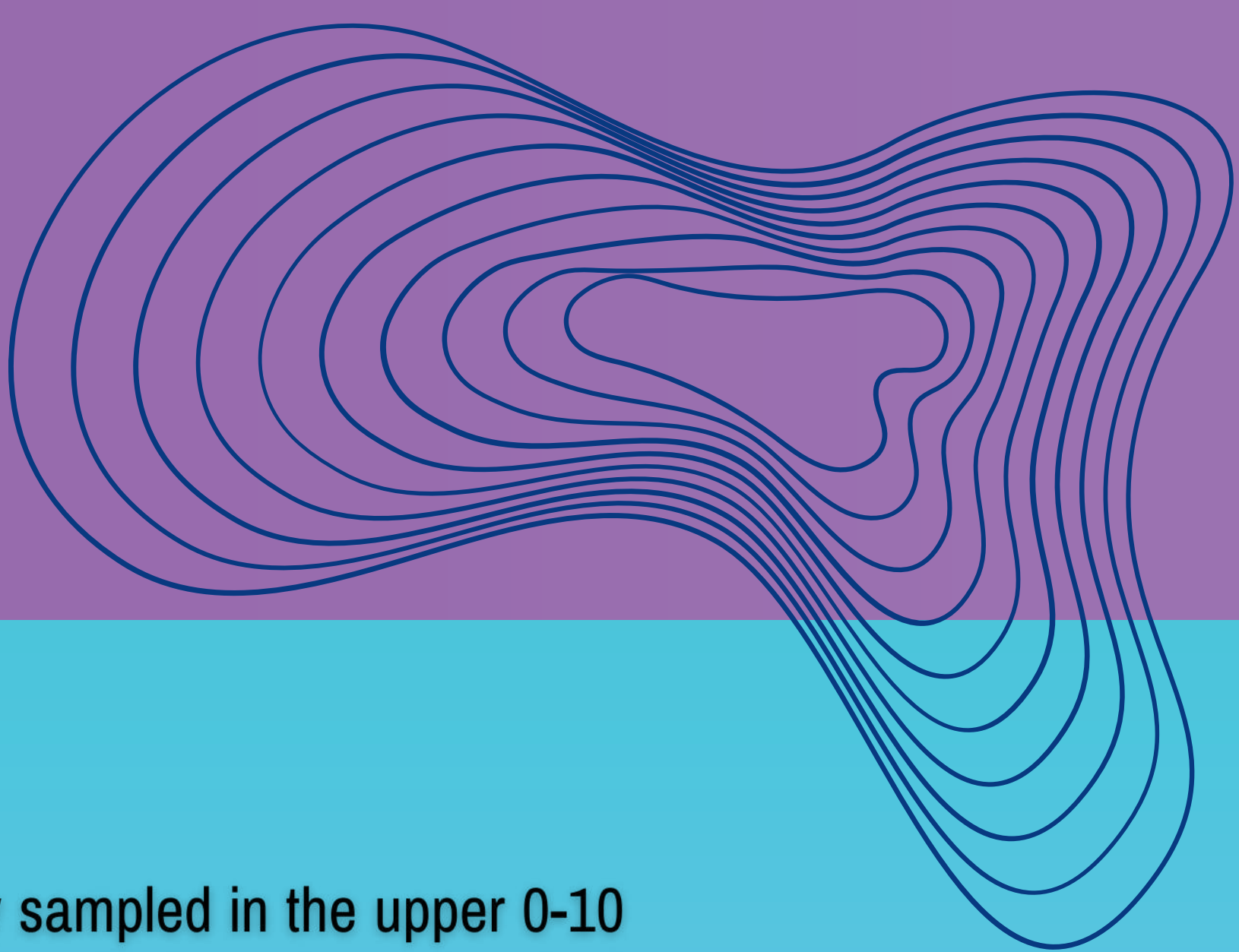


CHARACTERIZATION OF SOIL PROPERTIES AND SOIL ECOSYSTEM SERVICES IN MEADOWS FROM A HIGH MEDITERRANEAN MOUNTAIN (SIERRA DE LAS NIEVES NATIONAL PARK, SOUTHERN SPAIN).

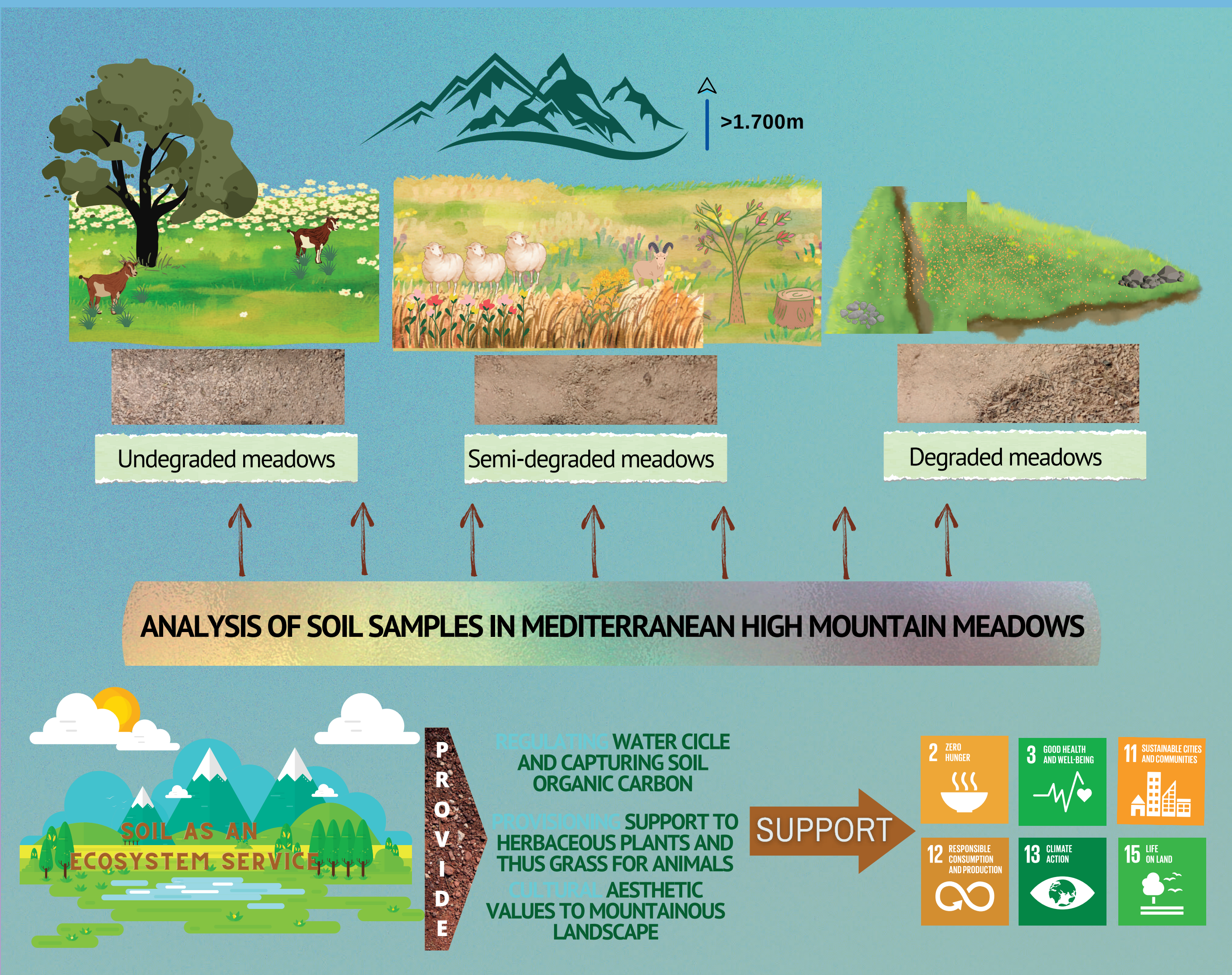


Mario Menjibar-Romero¹ ; Juan Francisco Martínez-Murillo^{1*2}
mariomenjibar@uma.es; jfmmurillo@uma.es

1.Laboratory of Geomorphology and Soils. Institute of Habitat, Territory and Digitalisation 2.Geography Department, Area of Physical Geography .
UNIVERSITY OF MALAGA



Introduction

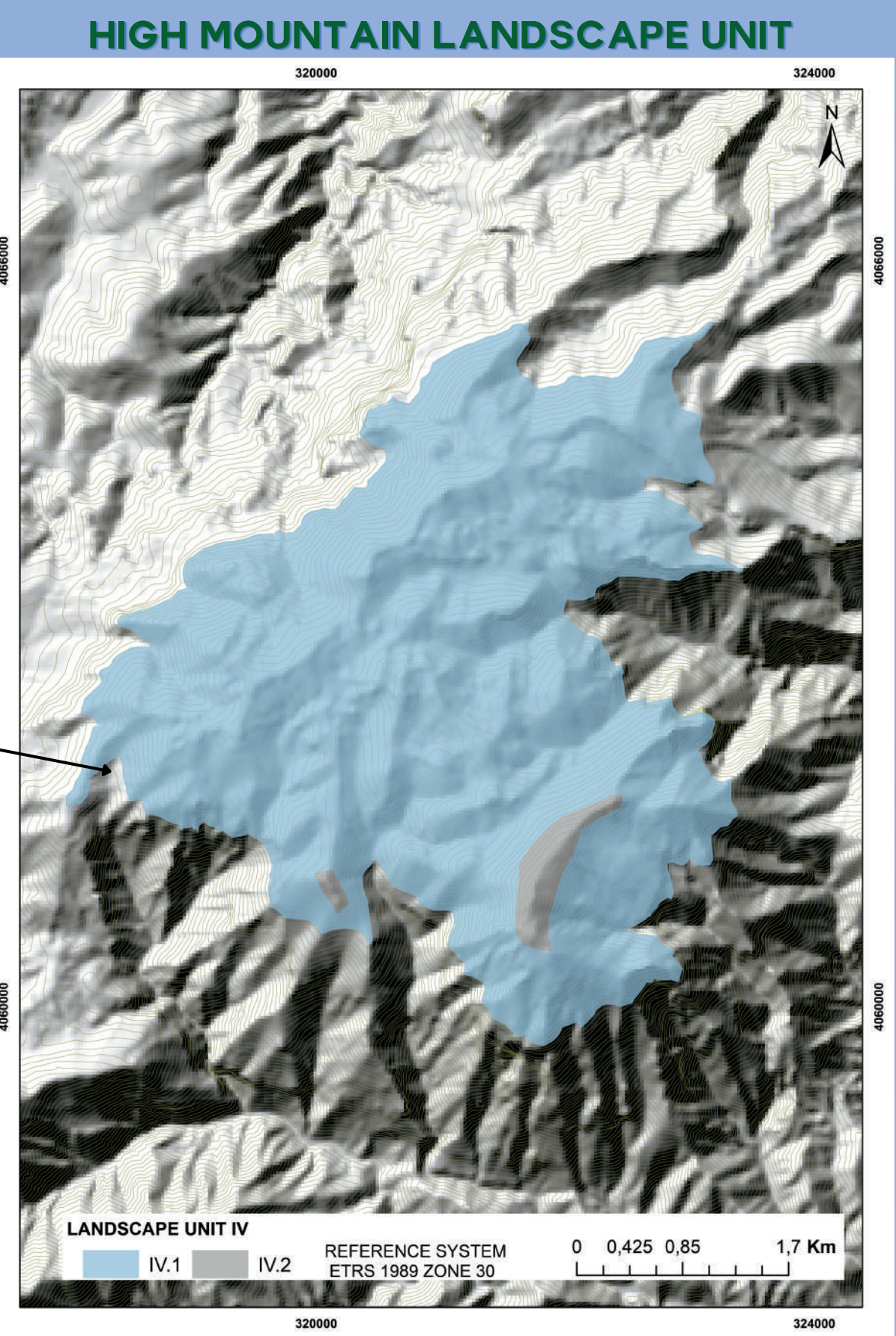
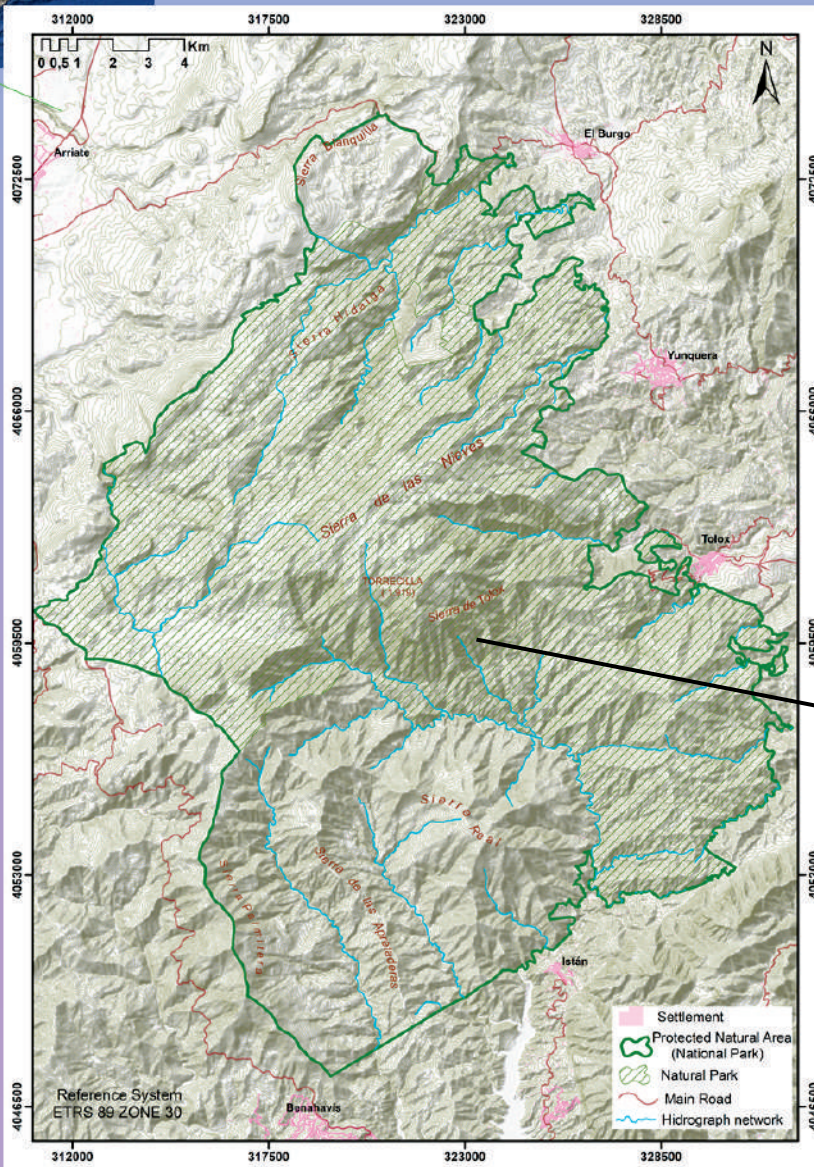


Objective

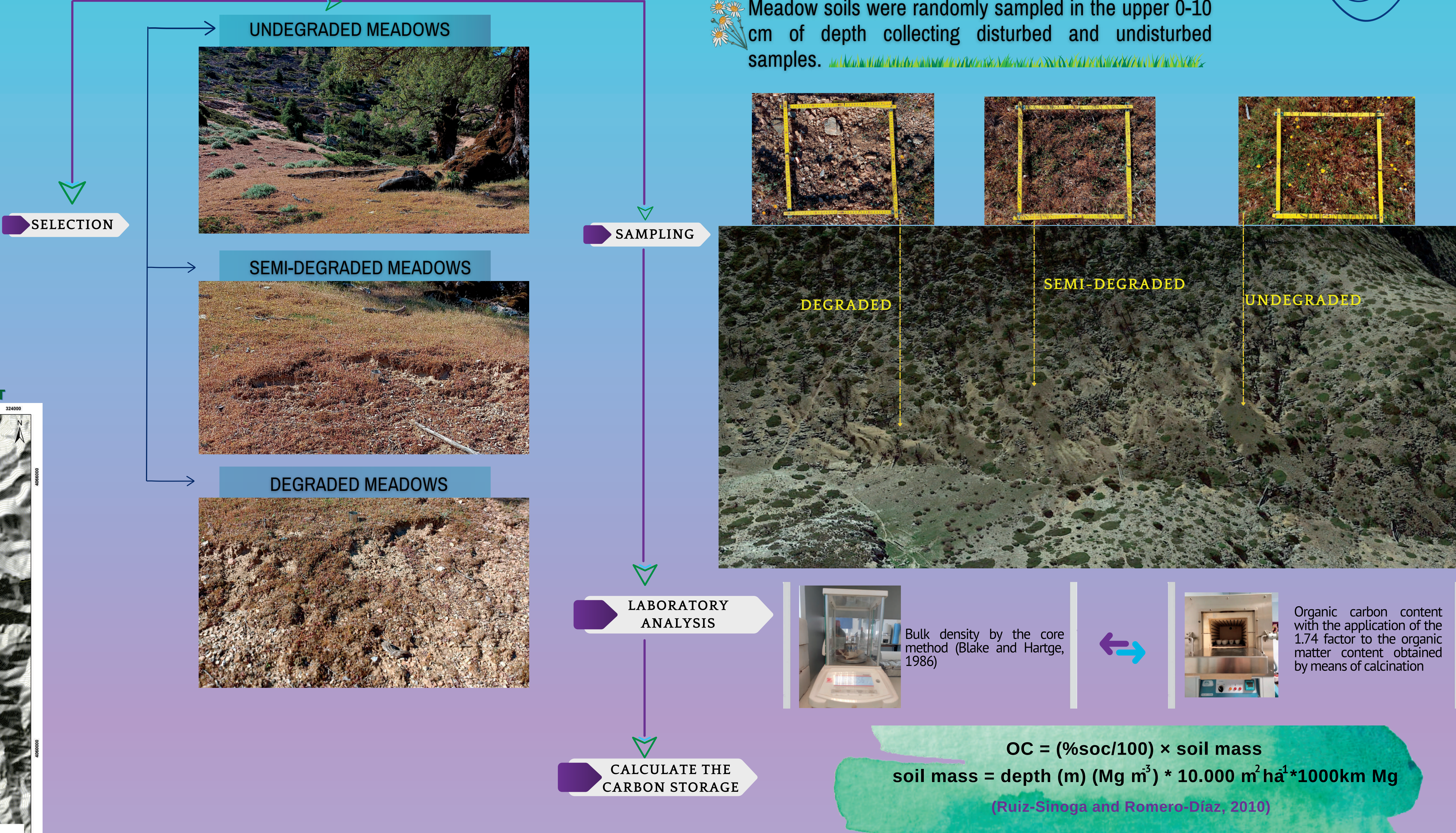
Evaluating, analyzing and characterising the soil ecosystem services provided by soils from meadows located in the upper part of a Mediterranean mountain (Sierra de las Nieves National Park).

STUDY AREA

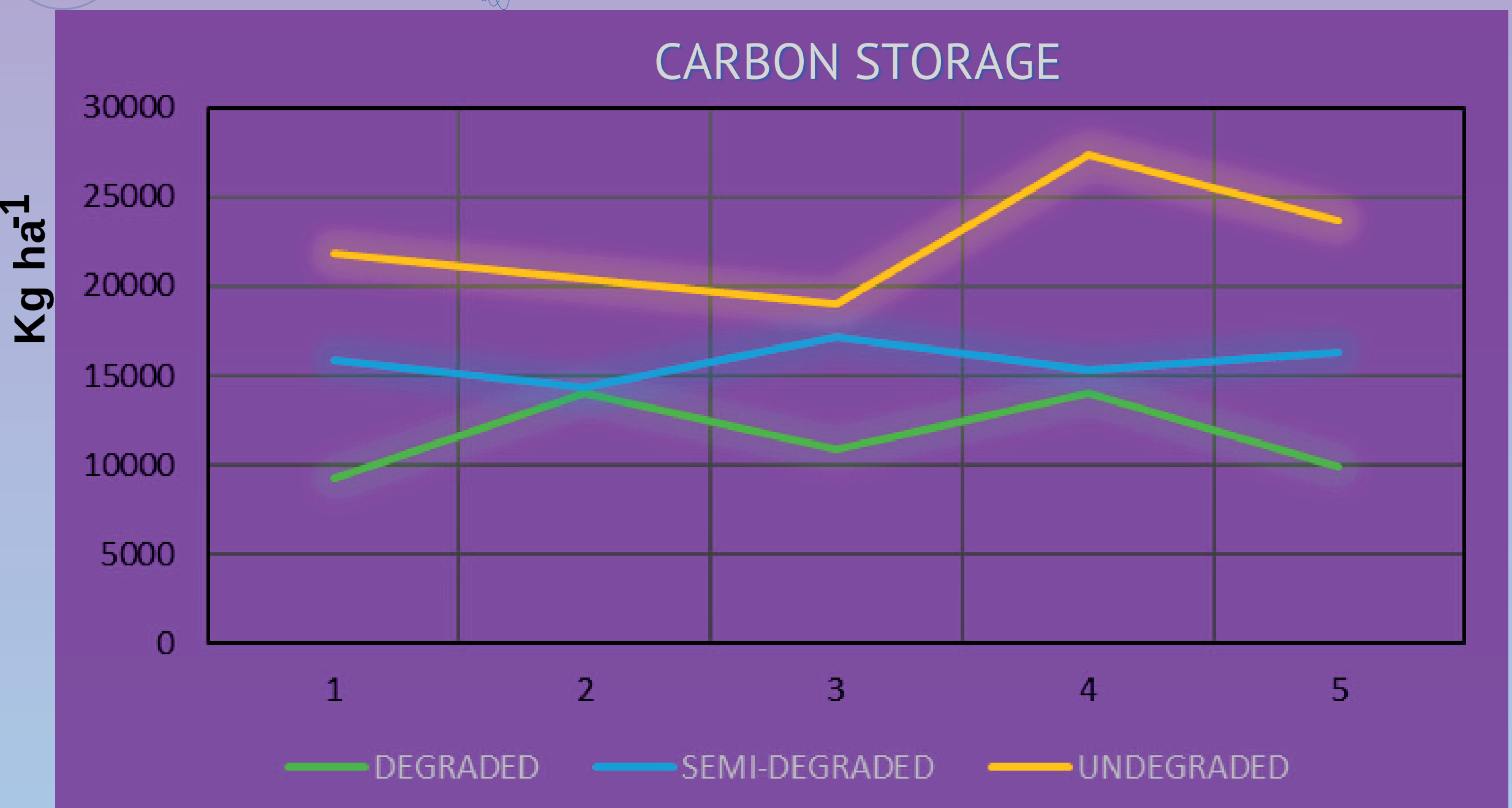
The study area is located in the highest part of the Sierra de las Nieves National Park. These meadows are located above 1,700 m.a.s.l., are related to the presence of marly bedrock where shrub cover is less than 50%, mainly, because of the coat and sheep grazing activity is not intensive. It is characterised by high mountain landscapes, limestone, structural and with the presence of a semi-continental Mediterranean climate, forest.



Materials and methods



Results



OTHER PROPERTIES

SAMPLE NUMBER	DEGRADED		SEMI-DEGRADED		UNDEGRADED	
	BD	OC (%)	BD	OC (%)	BD	OC (%)
1	1.2	1.6	1.2	2.7	1.1	4.1
2	1.1	2.5	0.9	3.0	1.0	3.9
3	1.2	1.8	0.9	3.9	0.9	4.3
4	1.1	2.4	1.2	2.5	0.7	7.9
5	1.1	1.8	0.9	3.5	0.8	6.3

WHERE: BD-> BULK DENSITY; OC-> ORGANIC CARBON %

Mean and standard deviation (SD) of soil properties in different MEDITERRANEAN HIGH MOUNTAIN MEADOWS in the Sierra de las Nieves, National Park. Where: n-> number of samples; SOC-> Soil Organic Carbon (%); EC-> Electrical Conductivity (dS/m); WP-> Wilting Point; C-> Cations; CIC-> Cation Exchange Capacity; BD-> Bulk Density; CS-> Carbon Storage.

Soil Poperties	DEGRADED			SEMIDEGRADED		UNDEGRADED	
	n	mean	±SD	mean	±SD	mean	±SD
SOC	5	2.0	0,4	3.1	0,5	5.3	1,7
Ph	5	5,8	0,3	6,0	0,3	5,7	0,2
EC	5	0,1	0,03	0,2	0,02	0,2	0,04
WP	5	13,5	1,0	14,3	1,9	16,4	4,7
C	5	4,4	0,6	4,9	0,5	6,9	2,7
CIC	5	17,0	3,9	23,6	3,4	17,1	3,9
CS	5	11,6	2,3	15,8	1,0	22,4	3,2
BD	5	1,1	0,1	3,1	0,5	25,3	1,7

TEXTURE: SILTY-LOAM AND SILTY

References

- Lasanta, T., Sánchez-Navarrete, P., Medrano-Moreno, L. M., Khorchani, M., & Nadal-Romero, E. (2020). Soil quality and soil organic carbon storage in abandoned agricultural lands: Effects of revegetation processes in a Mediterranean mid-mountain area. Land Degradation & Development, 31(18), 2830-2845.
- Pereira, P., Bogunovic, I., Muñoz-Rojas, M., & Brevik, E. C. (2018). Soil ecosystem services, sustainability, valuation and management. Current Opinion in Environmental Science & Health, 5, 7-13.
- Ruiz-Sinoga, J. D., & Díaz, A. R. (2010). Soil degradation factors along a Mediterranean pluviometric gradient in Southern Spain. Geomorphology, 118(3-4), 359-368.

Conclusions

1. The carbon capture in the first 10cm of soil was determined in meadows of different degrees of degradation.
2. It was observed a clear gradient of decreasing in carbon capture from the more to the undegraded meadow: the major and lower content in organic carbon and bulk density, respectively, the major carbon capture in soil surface.
3. Other parameters of soils showed similar trend.
4. As a preliminary study, this one showed the importance to preserve the meadow landscape of the Sierra de las Nieves National Park because of their role in soil ecosystem services: regulating carbon cycle, provisioning pastures for livestock, and cultural services given its ascetic character for visitors.

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