



# *Posidonia oceanica* Meadows Reforestation Project (Cartagena Port Authority). Offset CO<sub>2</sub> emissions using *Posidonia oceanica* as carbon sink.



Ander Retuerto Alegria  
Laboratorios Munuera SL (Ecomarina)  
Consultoría Ambiental Marina  
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# Background

Red Eléctrica in 2016, started the *Marine Forest Project*, which consisted of planting 12,800 fragments using an innovative technique, collaborating with IMEDEA and Laboratorios Munuera SL

Considering the successes obtained in the previous Reforestation experience, Laboratorios Munuera SL starts a new R+D+I Project, under the current contract of "*Water Quality Control*" of the Cartagena Port Authority



# Search for the Reforestation environment, potential capacity of the habitat for the Posidonia meadows growth

Locations where the seabed is consolidated (presence of gravel)

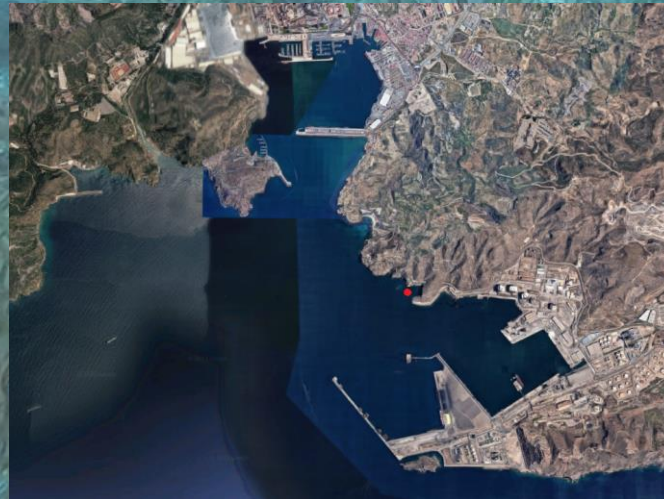
Zone 1 of the Port of Cartagena

*“Tajo de los Cuervos”*

Sea and Wind exposure

Light intensity

Depth (11 meters)





# *Posidonia oceanica* fragments collection

The chosen technique was the reforestation with fragments uprooted naturally by storms

Commercial/Scientific Divers select and collect the fragments to replant

The fragments gathered come from the anchorage in the “*Cabo Tiñoso - La Muela*” Marine Reserve and “*Isla de las Palomas ZEPA*” near the port of Cartagena

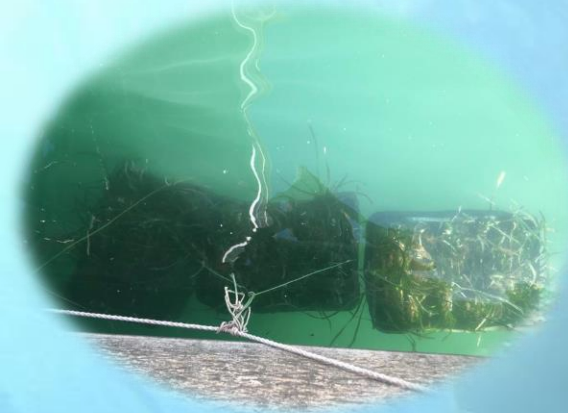




# Maintenance of fragments of *Posidonia oceanica*. Anchoring system attaching

Fragments are kept in the internal port waters of Cartagena (optimum water quality)

Fragments are attached to the anchoring system (brackets)





# *Posidonia oceanica* fragments planting

Planting is carried out by hand directly in the substrate with the support of a bracket that serves as an anchor, taking special care with the roots in the operation



# Results

65 fragments of *Posidonia oceanica* were planted in 4 patches with a gravel substrate in May 2022

The plantation monitoring consists in a visit one month after planting and a six-monthly monitoring plan

The global **survival rate is 76.92%** in May 2023



# Results

It is the first time that *Posidonia oceanica* has been planted in the waters of an industrial port of the characteristics of the Port of Cartagena (4<sup>th</sup> Port of Spain and 1<sup>st</sup> in movement of solid and liquid bulk)

Whereas, therefore, a survival rate of 76.92% a complete success

Thus, **75 new fragments** were planted during May 2023 in a new place in the Port of Cartagena



# Applications

Environmental Restoration Projects in degraded areas once anthropogenic factors were removed

Restoring *Posidonia oceanica* meadows to preserve their capacity as CO<sub>2</sub> sink and increase the offset CO<sub>2</sub> emissions

Biodiversity improvement of the ecosystem



# Acknowledgements

Our thanks to the Sustainability Department of the Cartagena Port Authority for the opportunity to develop this Reforestation Project with *Posidonia oceanica* in Zone 1 of the Port of Cartagena

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Alberto Echeita Diez



# References

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THANKS FOR YOUR ATTENTION