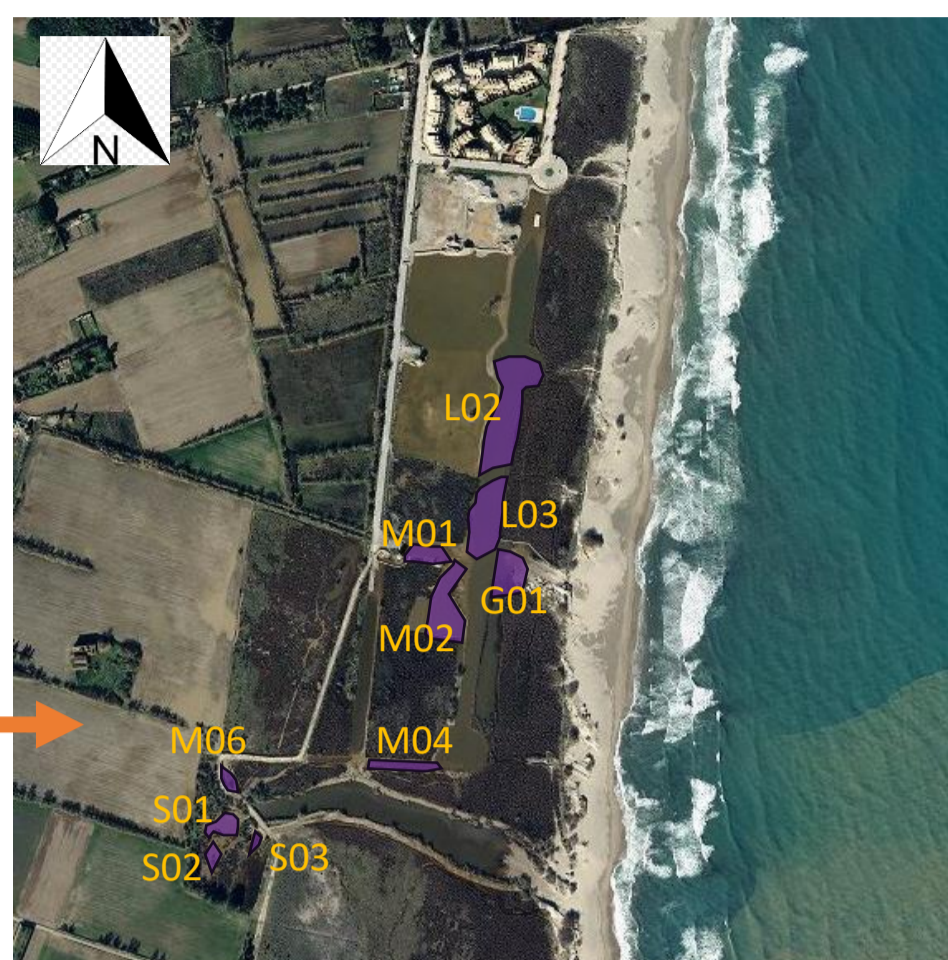
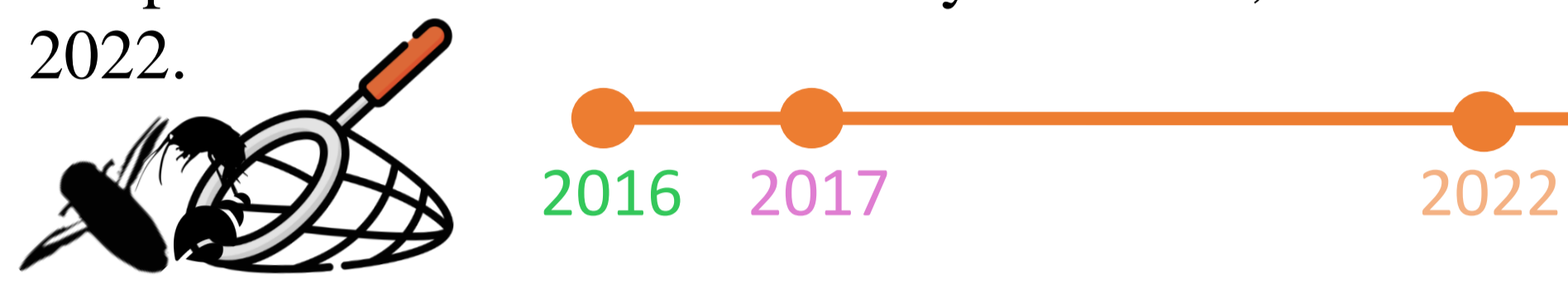


Introduction

Community dynamics in coastal lagoons is affected by flooding and confinement periods. These fluctuations directly impact the properties of the water, but also influence the connectivity and colonization process between different lagoons, which in turn, affects the metacommunity dynamics and its composition.

Methods

The aquatic community of 10 new lagoons were sampled since their creation the years 2016, 2017 and 2022.



Study area: La Pletera salt marshes

- Located in L'Estartit (NE of Catalonia) next to the Ter estuary
- Brackish coastal marshes in parallel to the coast along 2 km and with an extension of 55 ha.
- It has suffered transformations due to urbanization process, for this reason a recovery European LIFE project (LIFE13 NAT/ES/001001) that included the restoration of existing lagoons and the creation of new ones has been done.

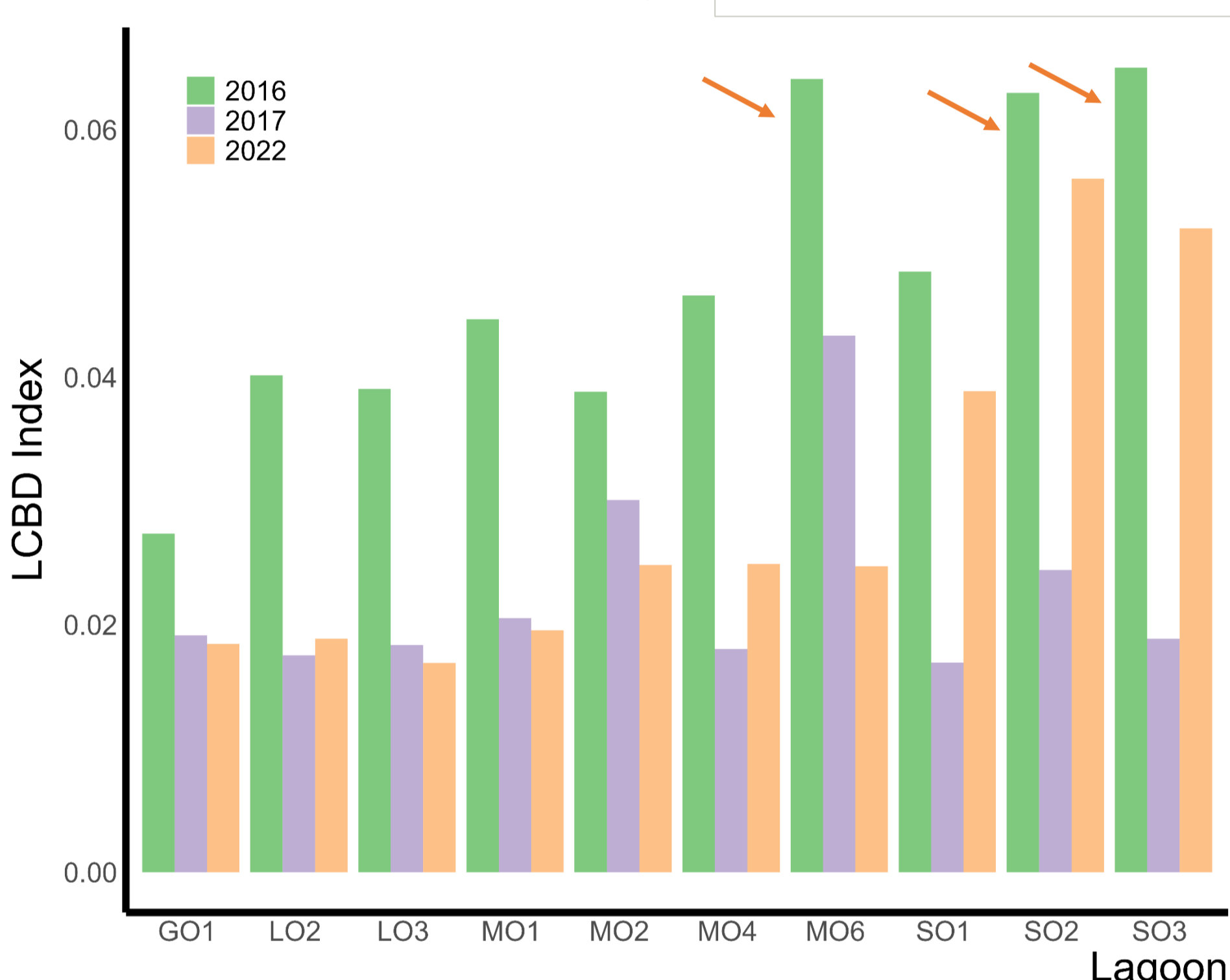


Objectives

- To evaluate if habitat condition improves after restoration.
- To Study the effect of environmental factors in community structure and composition.
- To Analyse the aquatic community assembly and biodiversity changes during the colonization process of newly created coastal lagoons.

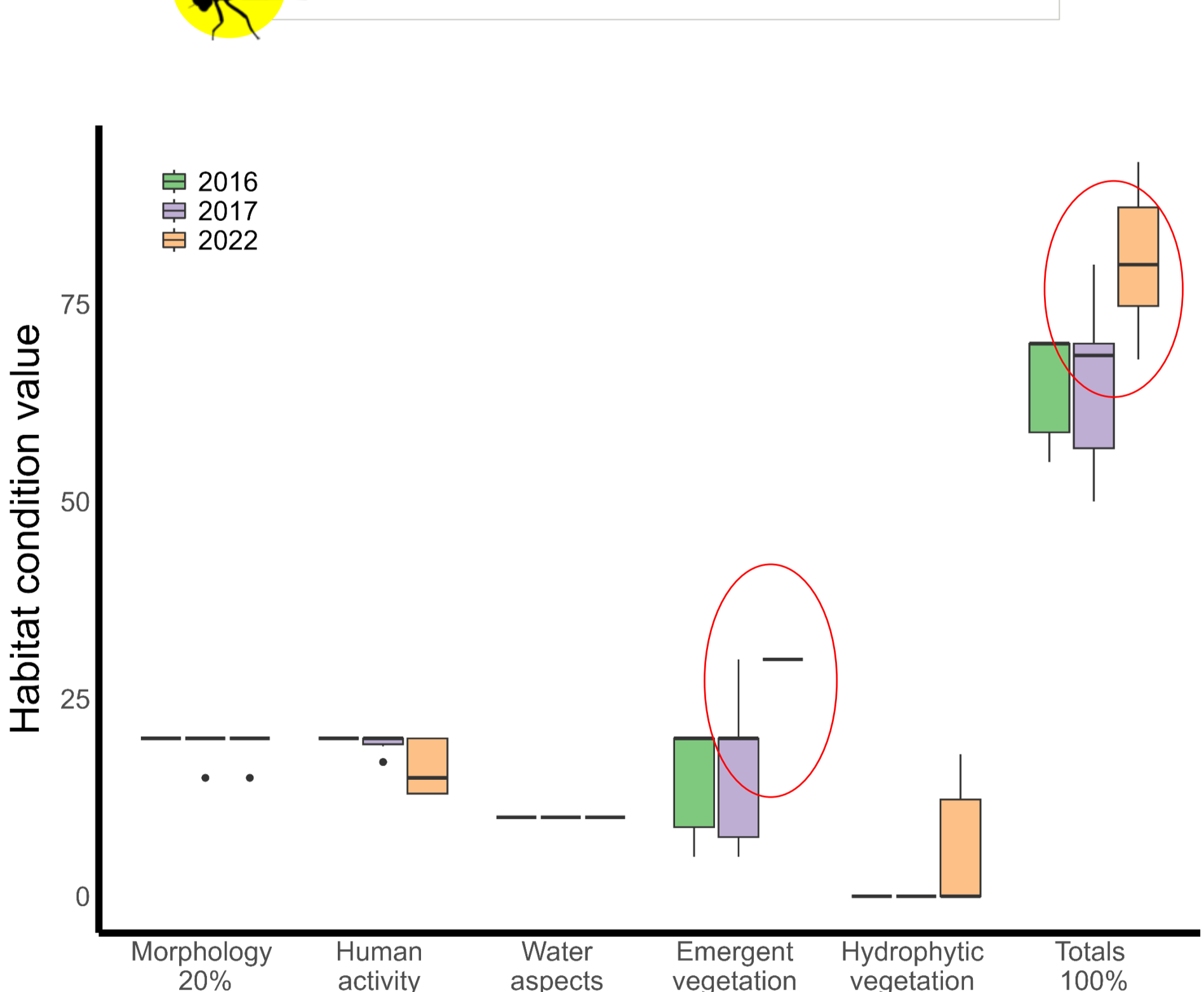
Results

Community structure and biodiversity: Relationship with conductivity and pond size

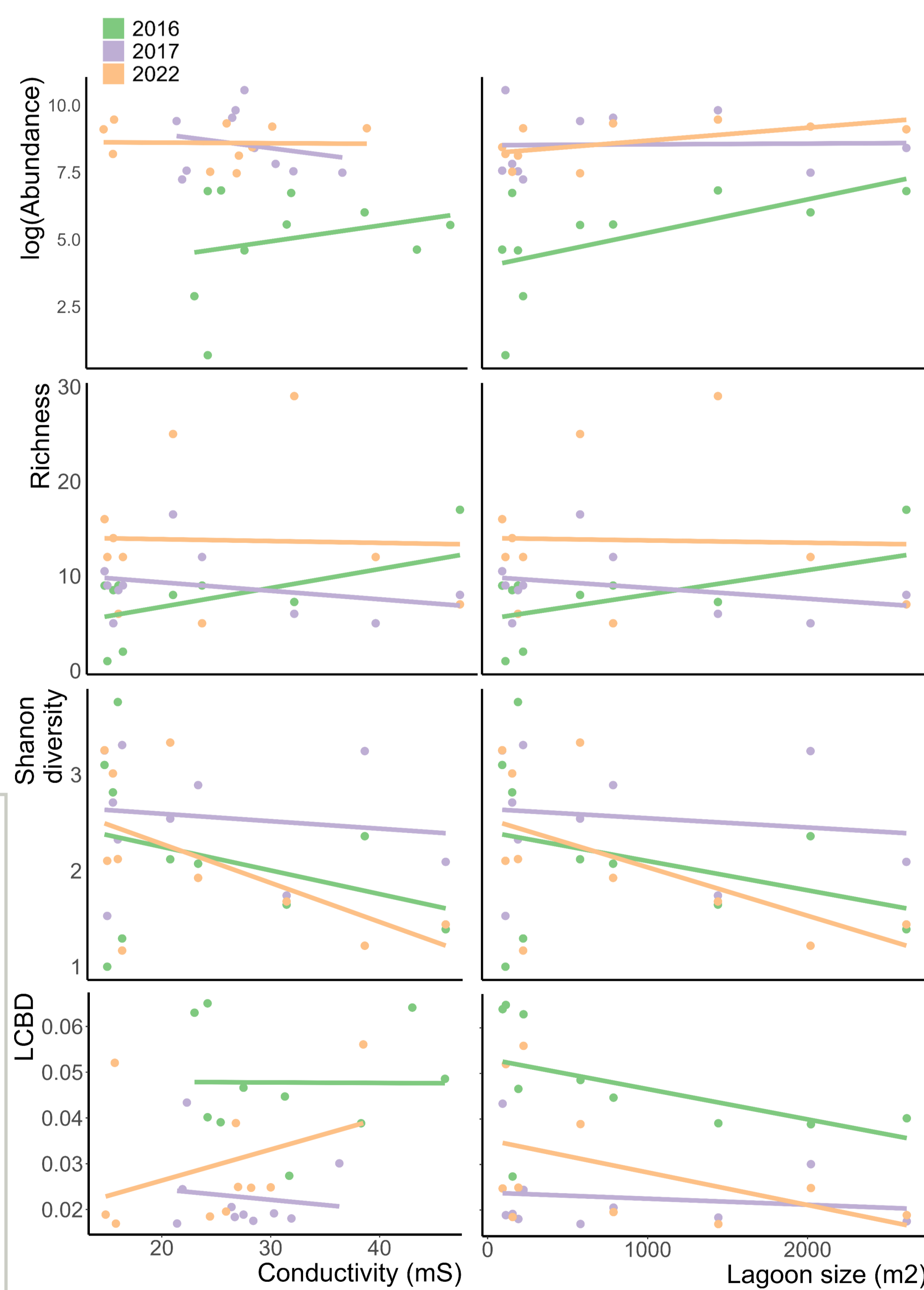


LCBD (Local Contribution to Beta Diversity) per year for each lagoon
LCBD is higher in 2016 (LMM, $p.v < 0,01$), specially in lagoons M06, S02, S03.

Habitat Condition



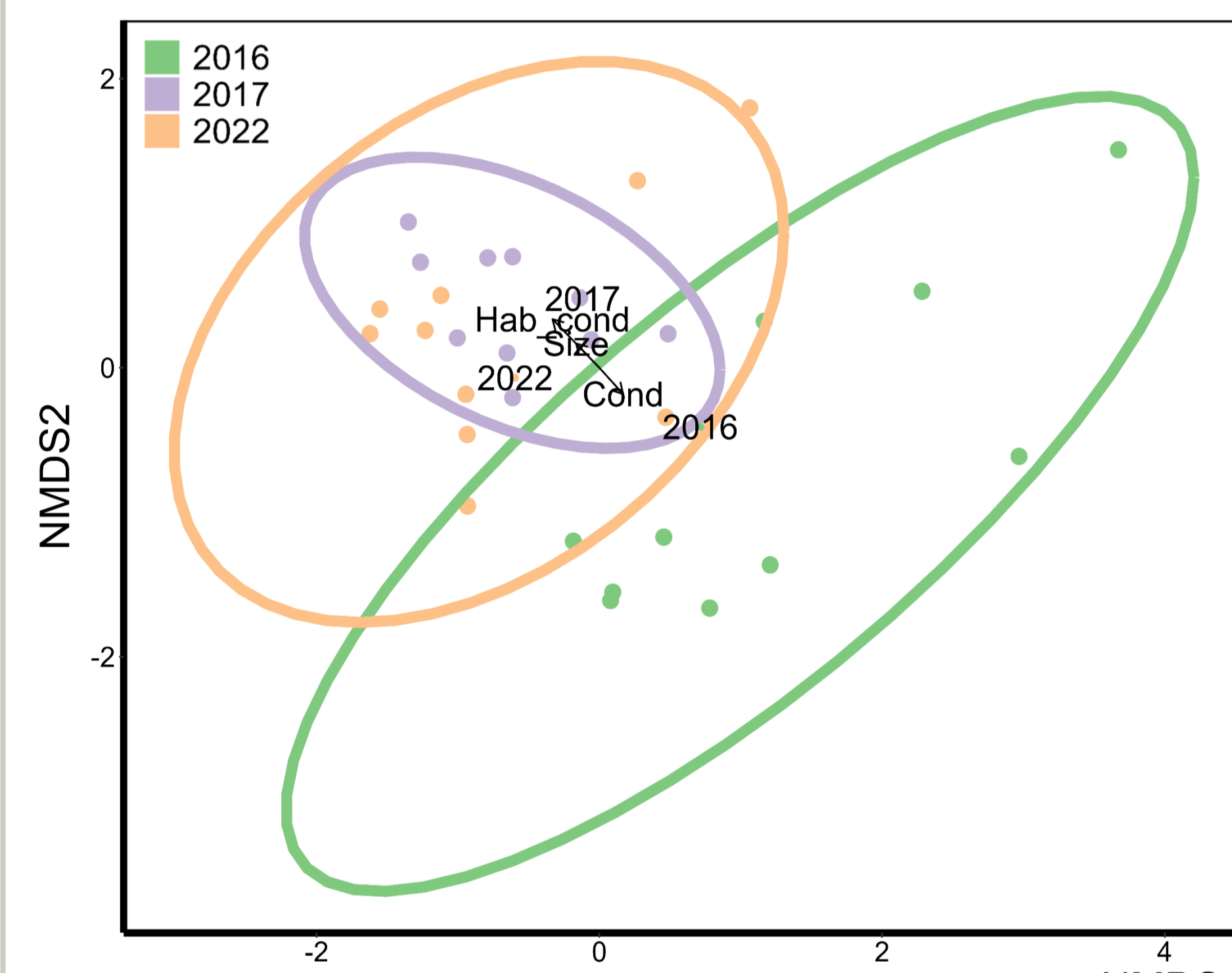
Habitat condition variables per year
Habitat condition value is higher in 2022. Specially there is an improvement of "Emergent vegetation value" (GLM, $p.v < 0,01$).



Correlations between community structure variables and environmental variables

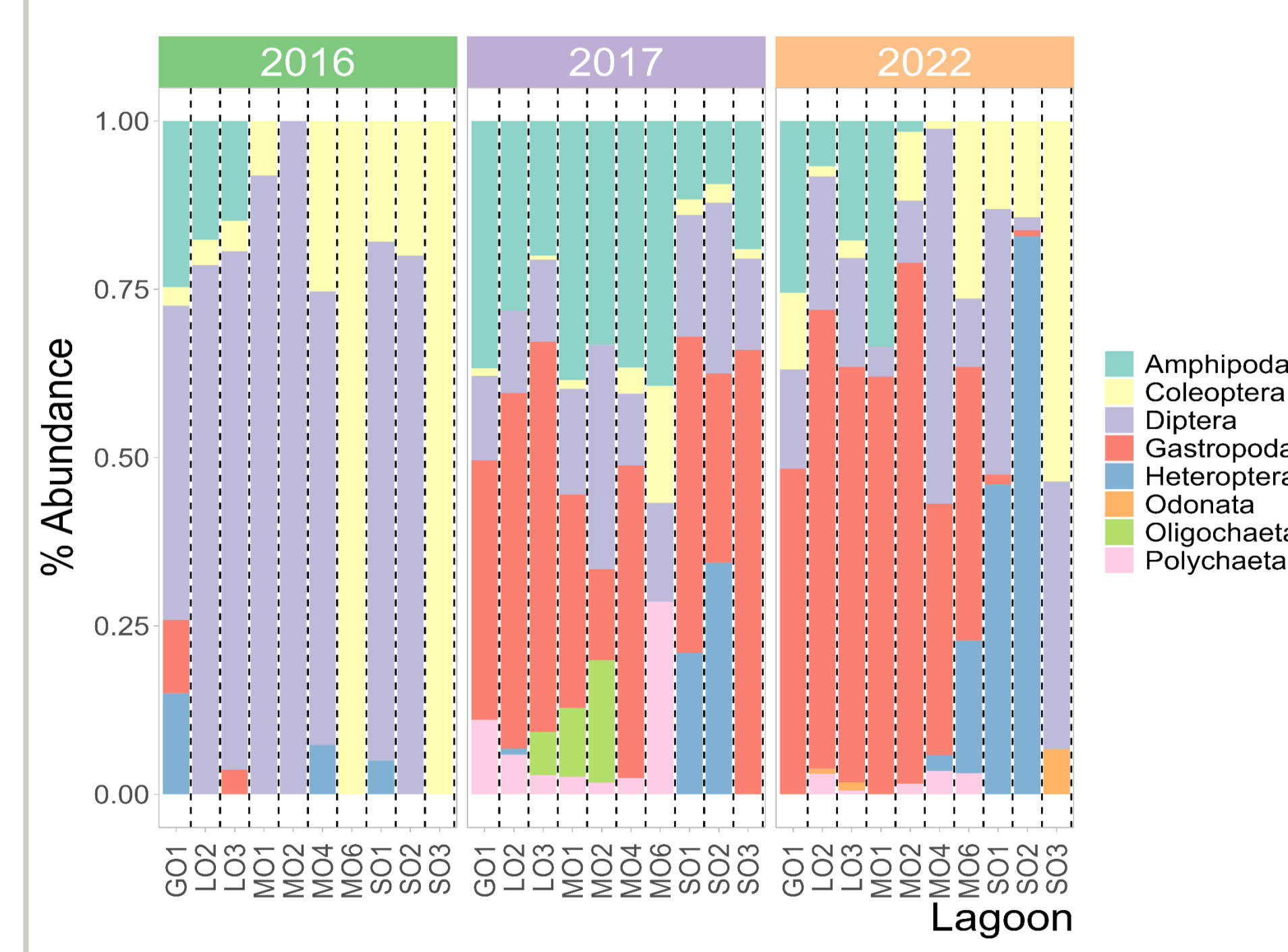
Abundance and LCBD (Local Contribution to Beta Diversity) value presents differences between years. Without effect of conductivity and pond size in community structure or in LCBD.

Changes in community composition and biodiversity (LCBD)



Similarity between community composition and relationship with environmental variables

We observe statistical differences between years in terms of community composition (Permanova (Bray Curtis), $p.v = 0,01$). And differences in Habitat condition ($p.v = 0,035$), Conductivity and Pond size do not explain the community composition differences.



% of abundance for each lagoon and year

2016 → Predominance of Diptera
2017/2022 → Predominance of Amphipoda and Gastropoda

Conclusions

- The condition of the habitat has improved since the year the lagoons were created. This improvement can be attributed to the emerging autochthonous vegetation.
- Environmental variables (i.e. pond size and conductivity) seems to not have changed their effect on community structure nor composition since pond creation.
- The composition of the community has changed throughout the colonization process. We can observe that the pioneer colonizers were mainly Diptera in 2016 and have been replaced by species of Gastropoda and Amphipoda in 2017 and 2022. Changes in taxa could be reflected in LCBD values, being higher in the year of lagoons creation.

