

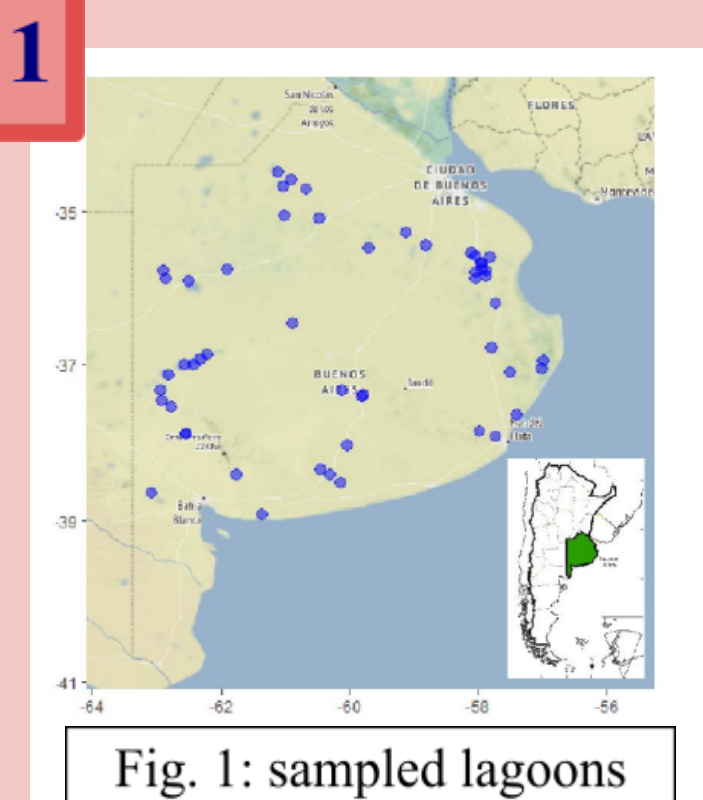
STRUCTURING PROCESSES OF PLANKTONIC BACTERIAL COMMUNITIES IN BUENOS AIRES PAMPAS LAGOONS

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Understanding the mechanisms that determine diversity patterns is a central goal in ecology and is relevant in the case of the bacterial community, given its main role in fundamental ecological processes. The Niche Theory, based on the principle of competitive exclusion, considers that the community structure results from environmental selection and interspecific interactions.

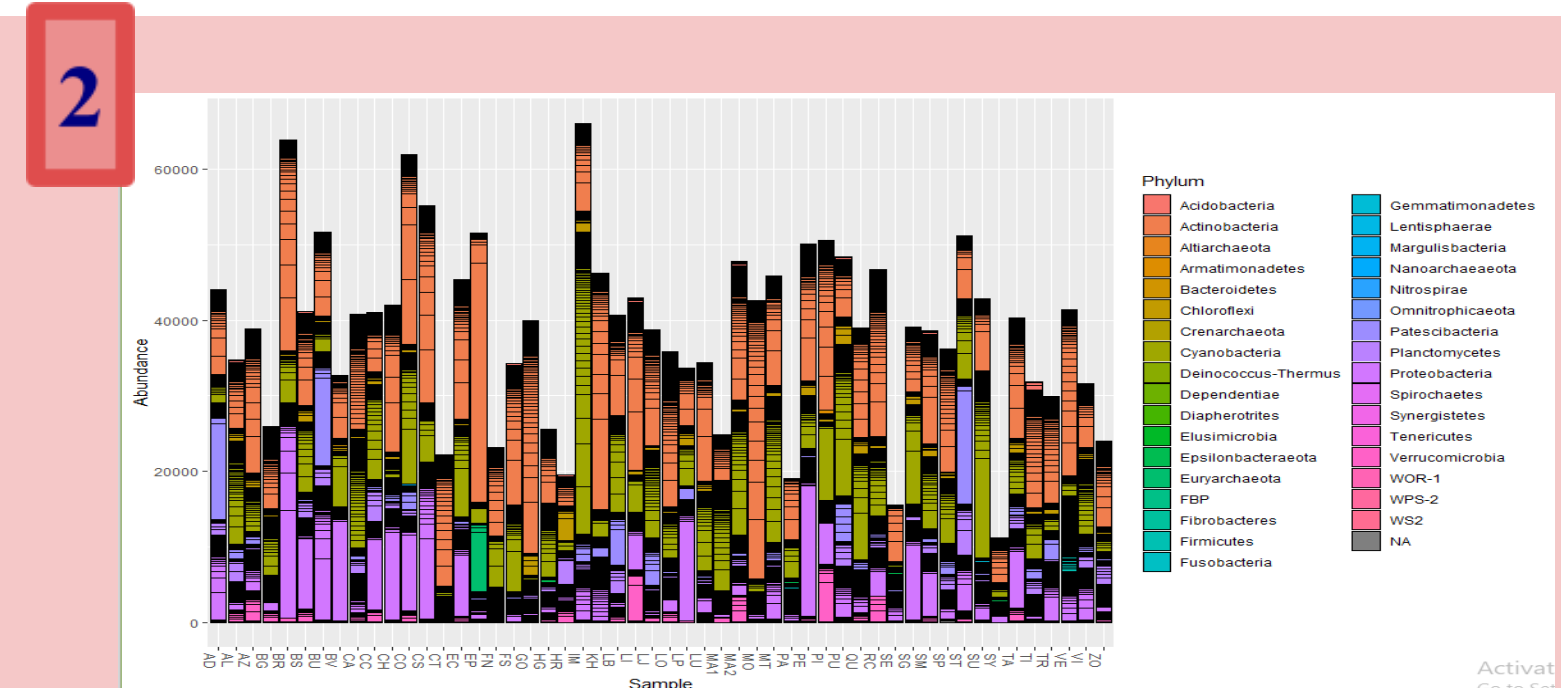
On the other hand, the Neutral Theory assumes ecological equivalence between individuals and defines communities as groups of sympatric species that result from stochastic processes of death and recruitment of individuals.

The objective of this work was to evaluate the relevance of deterministic and stochastic processes in the structuring of bacterioplankton at different spatial scales (regional, basin, local) in shallow environments of the Pamela region. For this, 52 lagoons, with contrasting limnological characteristics, were sampled, all belonging to the province of Buenos Aires (see figure 1). The bacterial composition was analyzed by massive sequencing on the *Illumina Miseq* platform. Null models based on taxonomic and phylogenetic information were applied.

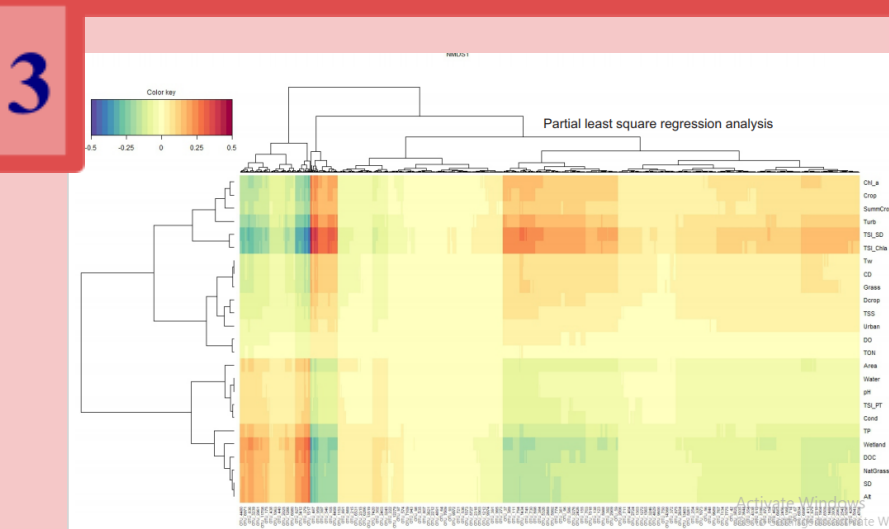


	Pampean Lakes (n = 52)			
	Mean	SD	Max	Min
Water temperature (°C)	18.5	5.1	30	6.5
DO (mg l ⁻¹)	10.24	2.6	20	5
PH	8.76	0.31	9.40	8
Conductivity (mS cm ⁻¹)	7.97	27.79	202.10	0.32
Secchi disc depth (cm)	29	29	140	7
Turbidity (NTU)	88.67	76.60	363	2.71
SPM (mg l ⁻¹)	116.8	142.5	788.4	6.7
POM (mg l ⁻¹)	40.80	47.60	344	6.70
DOC (mg l ⁻¹)	93.23	176.30	1010	1.63
Chl-a (µg l ⁻¹)	87.8	152.2	981.1	1.6
TON (µg NI ⁻¹)	5063.0	1474.4	10830.4	2856.0
TDON (µg NI ⁻¹)	3790.1	1072.2	7235.2	1926.4
TP (µg PI ⁻¹)	766.1	876.3	4538.0	46.1
TDP (µg PI ⁻¹)	560.4	804.0	4139.6	0.1

Fig. 2: Physico-chemical characteristic table



17,540 ASVs (Amplicon Sequence Variant, unique DNA sequences obtained from massive sequencing) were identified, mostly associated with the phyla **Proteobacteria (purple, 32.75%)**, **Actinobacteria (orange, with 15.30%)** and **Cyanobacteria (green, 14.14%)**.



A habitat preference was observed in certain ASVs, systematically obtaining community assemblages: "Clear", "Turbid" and "Halophyte" type.

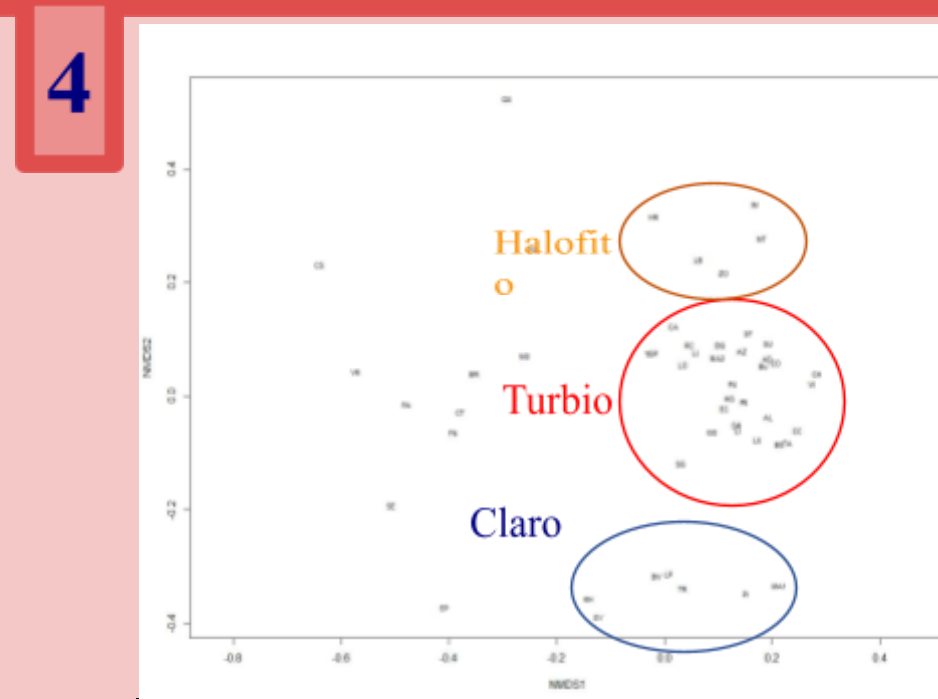
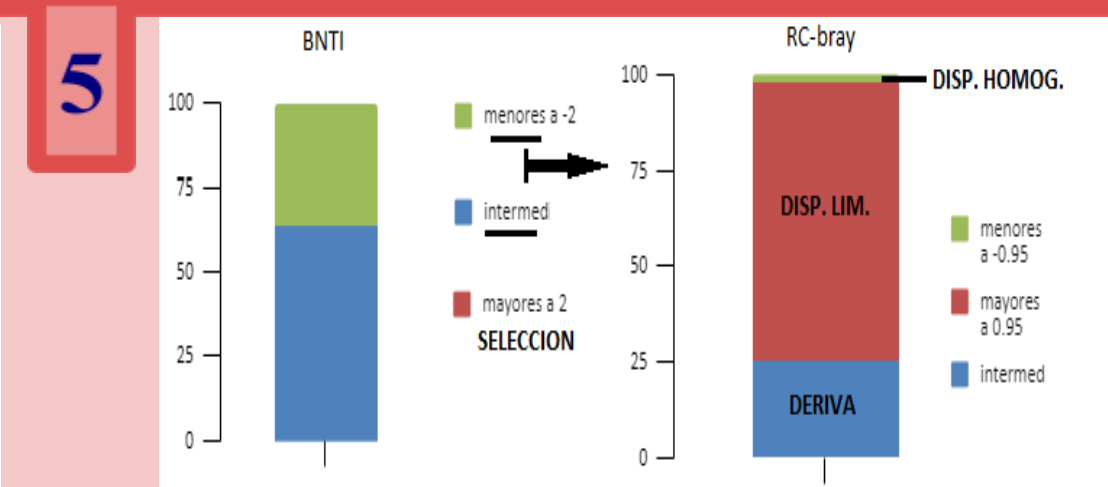


Fig. 5: Lagoon groundation according to their composition (Raup Crick index)

Comparing the observed number of shared vs random ASVs, a trend towards certain groupings was found, always according to habitat preferences.



Following the methodology of Stegen (2013), the effect of the processes that shape communities. At the regional level, the predominant process is **Dispersion (74.8%)**, followed by **Drift (25%)** and **Selection (0.15%)**.

Conclusions: At the regional level, the effect of dispersion has a much greater significance than environmental selection when shaping the community composition of planktonic bacteria. On the other hand, preliminary analyzes indicate that, at the local level, more eutrophic environments show a stronger local environmental selection of ASVs. It was observed that there is a habitat preference for certain ASVs.