

SUCCESSION OF AQUATIC MACROINVERTEBRATE COMMUNITIES IN A NEW CREATION COASTAL POND

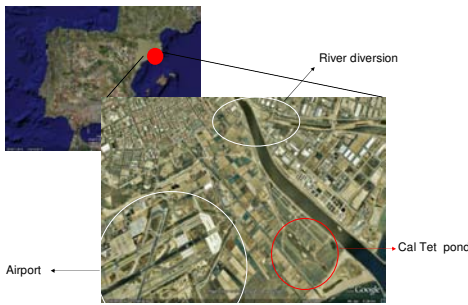
Why this study and this site?

- 1- Creation of a new pond in Llobregat Delta as compensation for the drying up of wetland areas after the Barcelona airport expansion.
- 2- Poor knowledge about some aspects of ponds ecology: i.e. colonization and successional dynamics

Objective

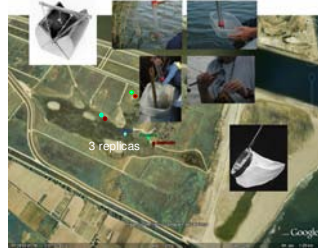
To characterize and quantify the changes in the community composition during the colonization process.

Study site



Methodology

Sediment + Chara bed: Van Veen grab sampler
Epiphytic macroinvertebrates: Kornijow's sampler

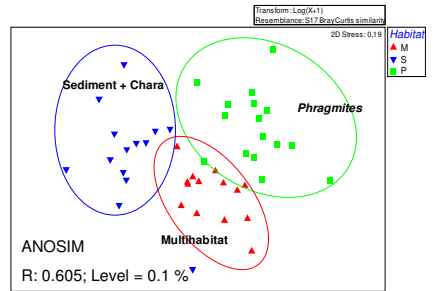


Multihabitat: sweep-net

Sampling period: monthly from June 2004 to July 2005 (Phragmites: extra samples in June and October of 2007)

Differences between habitats

Each habitat presented a singular macroinvertebrate assemblage

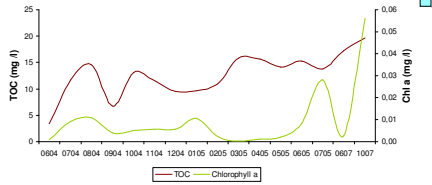
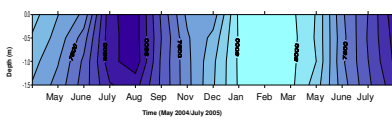


MDS and ANOSIM analysis testing differences between habitats (M = multihabitat, S = sediment, P = Phragmites)

Physico-chemical characterization

Mesotrophic pond undergoing on a natural eutrophication process

	Minimum	Maximum
Depth (m)	0.90	1.60
T _s (°C)	6.1	27.6
Conductivity (mS/cm)	4.5	9.8
Dissolved oxygen (mg/l)	5.8	14.3
SRP (mg/l)	0.005	0.14
DIN (mg/l)	0.25	10.15



INVAL analysis (significant taxa, $p \leq 0.01$)

Total S	Multihabitat	Phragmites	Sediment & Chara
	26	17	15
	<i>Sympetrum fonscolombii</i> *, <i>Ichnura elegans</i>	<i>Dicortendipes pallidicornis</i> , <i>Psectrocladius sordidellus</i> -t, <i>Cricotopus ornatus</i>	<i>Tanytarsus horni</i> , <i>Chironomus riparius</i> , <i>Procladius choreus</i> , <i>Microchironomus deribae</i> *, <i>Polypedilum nubifer</i> *

The species are arranged from more to less significant. In color: species recorded exclusively for that habitat.

Quantifying changes in community composition along succession:

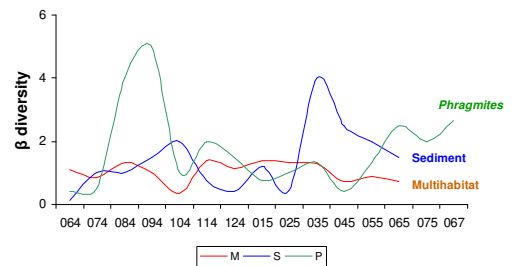
β diversity

Relative abundances of species, densities and α diversity

Only taxa present in $\geq 1\%$ of samples and/or representing $\geq 2\%$ of total abundance are plotted.

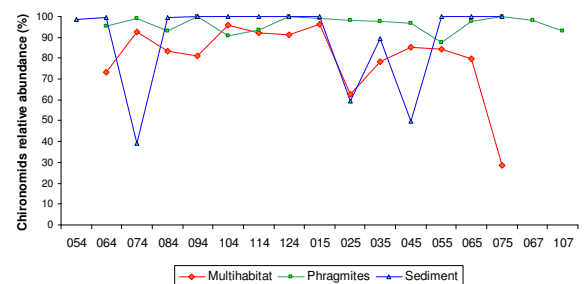
β -diversity

Community structuration dynamics



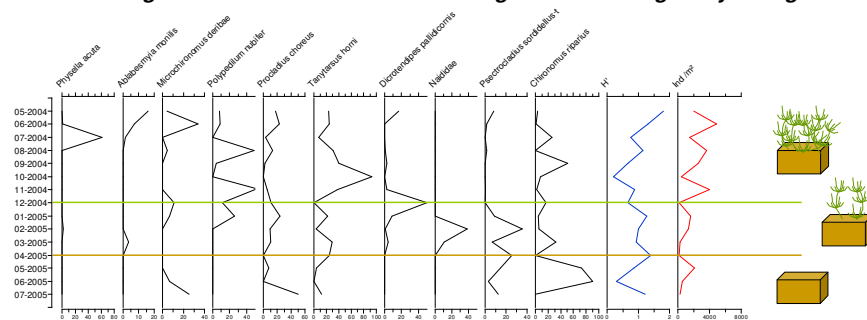
Community composition

The chironomids are the most abundant group

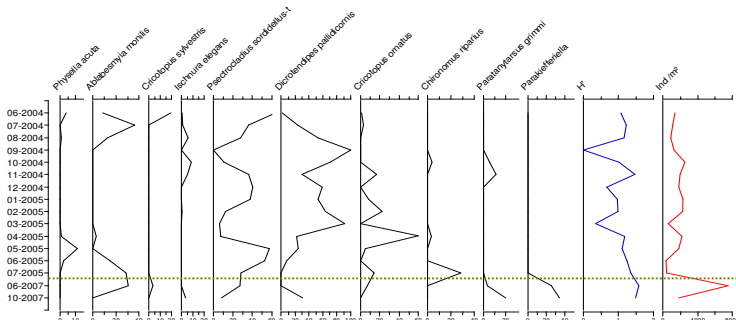


Sediment + Chara beds

Decreasing diversities and densities following habitat heterogeneity changes.



Communities attached to Phragmites australis



Period 2004 – 2005: high species turnover and fluctuations in species abundances.

Year 2007: higher densities and α diversity. The growth of the *Phragmites* stands led to a more structured community.