

CHARACTERIZATION OF THE BENTHIC MACROINVERTEBRATE COMMUNITIES OF AN URBAN RIVER (TINTO RIVER, PORTUGAL)

Jesus T.

Universidade Fernando Pessoa, Faculdade de Ciência e Tecnologia

(<http://fct.ufp.pt/>; <http://www.facebook.com/fct.ufp>) Praça 9 de Abril, 349, 4249-004 Porto, Portugal, tjesus@ufp.edu.pt

Introduction

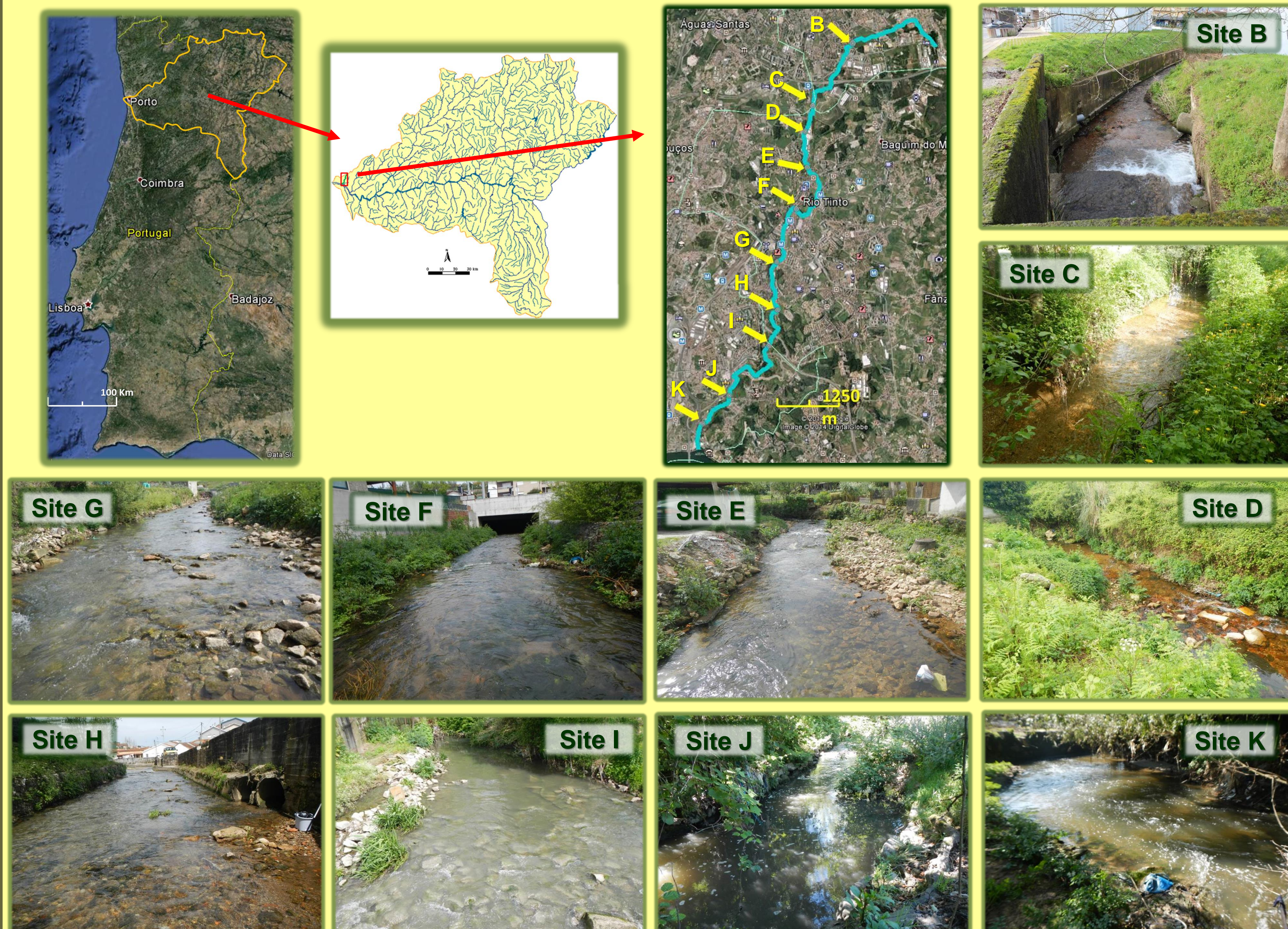
The Tinto river is a small stream approximately 11,4 km long and it's the last tributary of the right bank of Douro river at Porto. Its watershed has an area of approximately 23,5 km² and is part of Douro catchment.

For several centuries this river has been an important natural resource with good ecological status that led to development of small villages that took advantage of river runoff to run watermills. In recent decades, this natural heritage deteriorated, mainly due to the urban and industrial pressure and pollution.

The benthic macroinvertebrate community consists of a group of organisms that have a wide diversity of anatomical, physiological and ecological adaptations. This diversity allows them to colonize all types of aquatic ecosystems and makes them one of the most popular indicators of biological quality of water.

This work, carried out within a project which main objective is the rehabilitation of Tinto river, aims to make the study of benthic macroinvertebrate communities and some parameters related to the ecological status of Tinto river in order to determine the main sources of pollution and to propose measures for its rehabilitation.

Sampling Sites Characterization



Methodology

Parameters

(10 sampling sites: B, C, D, E, F, G, H, I, J, K)

Benthic macroinvertebrates

October and December 2013 and March 2014

- Sampling with a hand net

Sampling sites characterization

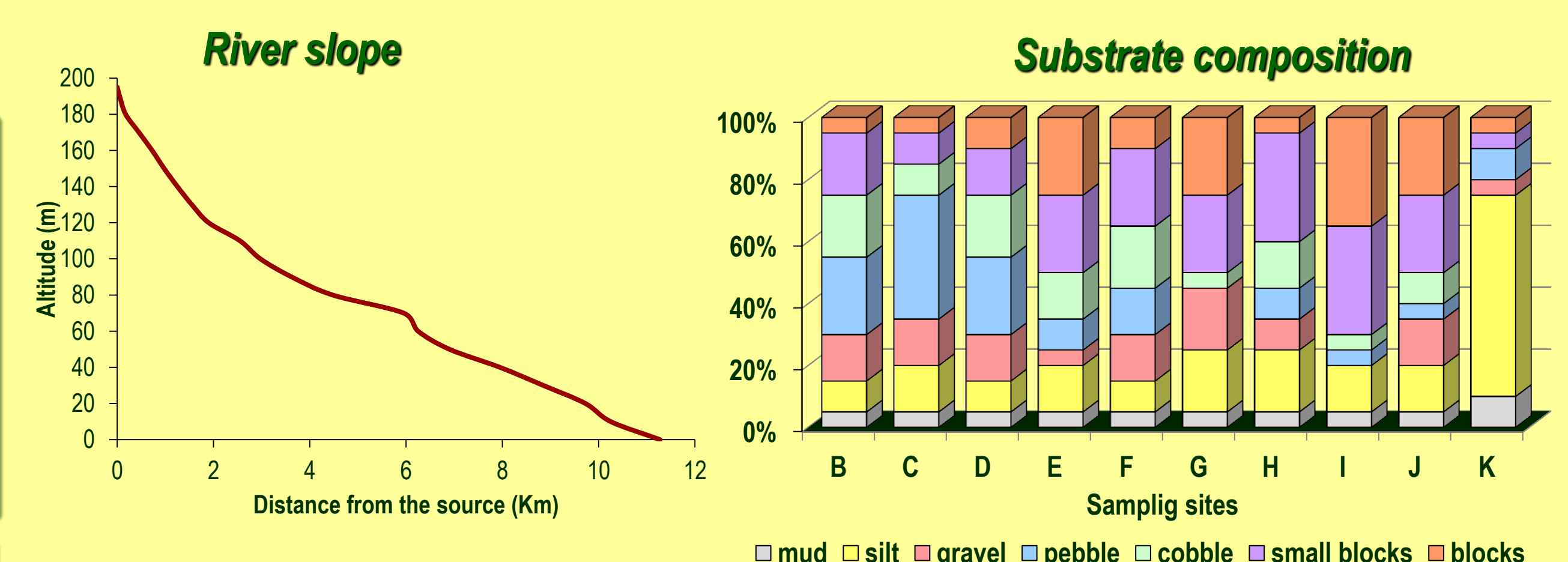
- Physical and chemical parameters
 - (conductivity, nutrients, % oxygen saturation, BOD)
- Hydro-morphological parameters
 - (slope, substrate composition, habitat quality)

Data analysis

Index and metrics

- Number of organisms and taxa
- Biotic indexes: IBMWP and IPT_N
- Shannon-Weaver diversity index and Pielou equitability index

Temporal variation of all parameters

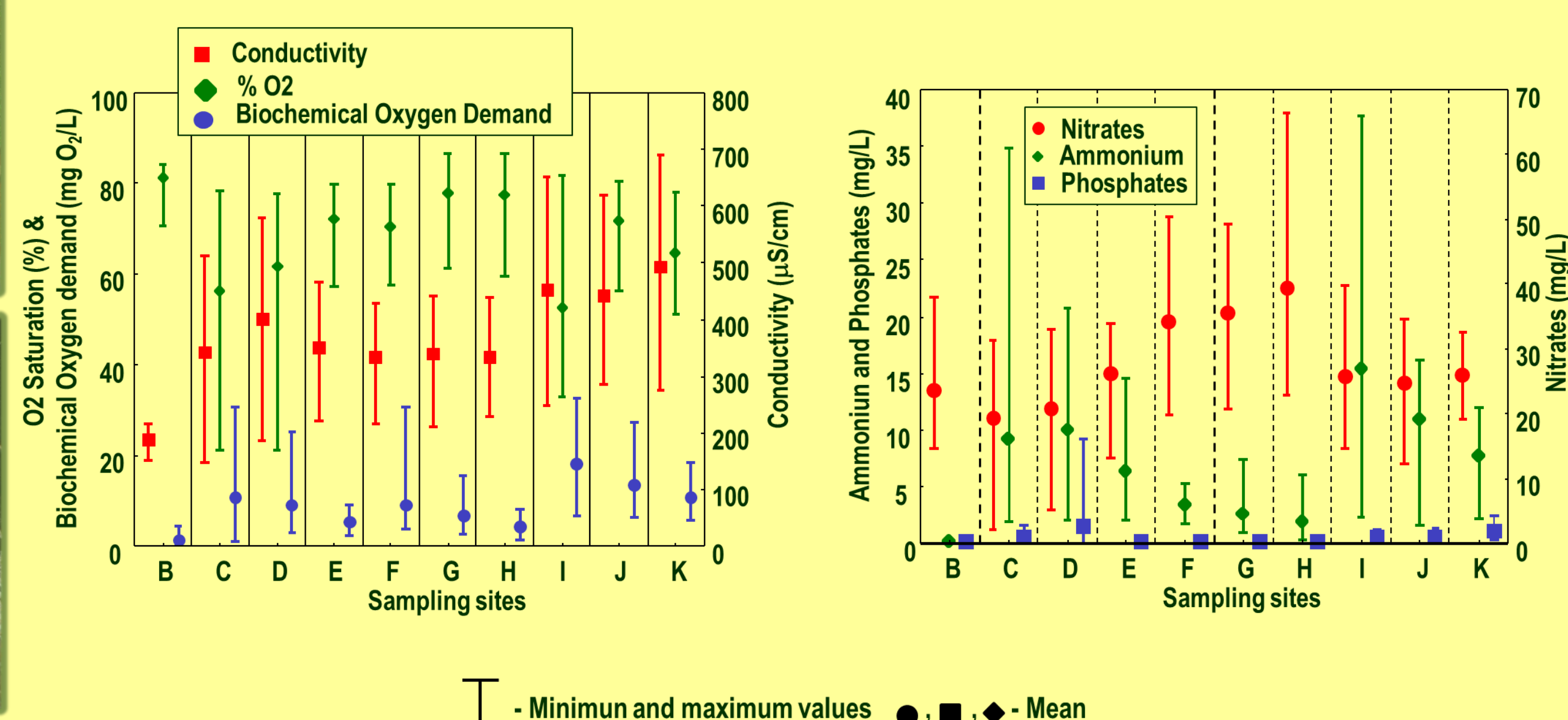


Habitat Quality

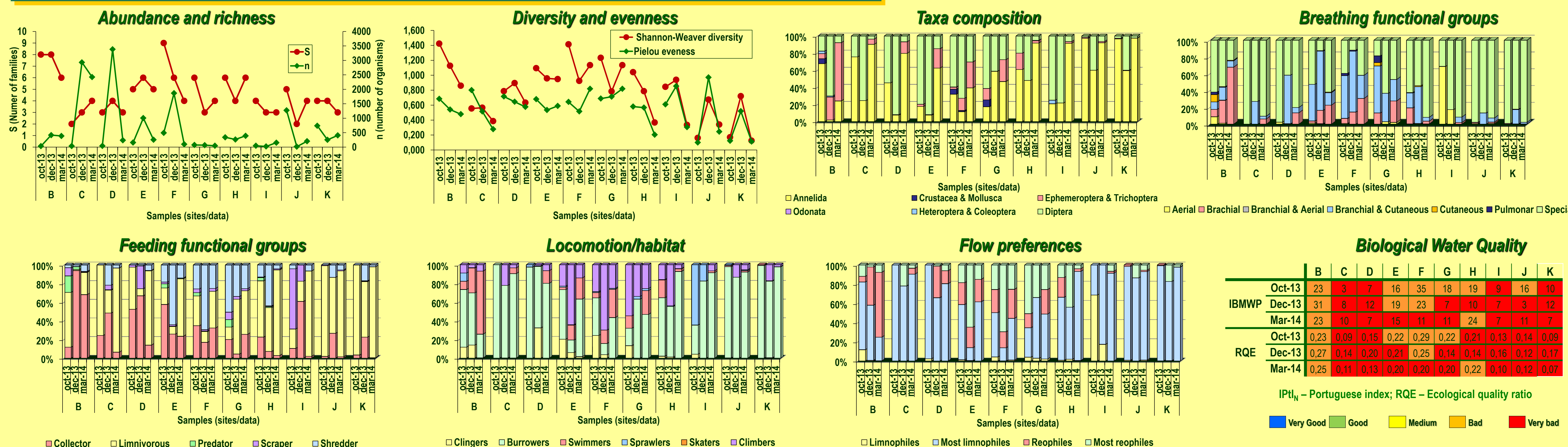
	B	C	D	E	F	G	H	I	J	K
Riparian quality (QBR)	5	65	55	0	0	30	0	60	25	70
Habitat quality (EPA)	127	129	139	105	116	122	117	131	118	133

Very Good Good Medium Bad Very bad

Chemical parameters



Characterization of the macroinvertebrate communities



Conclusions

The Tinto River presents high levels of organic contamination with effects on the macroinvertebrate communities that are constituted by a small number of taxa belonging mainly to the Annelida (Oligochaeta) and Diptera that are collectors and limnivorous and live buried in the substrate.

The levels of organic contamination increases from upstream to downstream and it is possible to verify the presence of some mayflies until the site H and organisms that present branchial breathing which can be explained by the relatively high concentrations of dissolved oxygen due to the presence of numerous riffles areas and the reduced depth.