

MACRO INVERTEBRATES FROM THE BROOK OF PONTIDO IN PÓVOA DE LANHOSO

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PORTUGAL

Students involved in the project:

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School year 2014/ 2015



Biodiversity of Rivers
2013-2015

AQUATIC MACROINVERTEBRATES

- **"MACRO INVERTEBRATES ARE ANIMALS VISIBLE TO THE NAKED EYE (MACRO) WITHOUT SPINE (INVERTEBRATES)."**
- LIVING BEINGS THAT LIVE IN AQUATIC HABITATS NEAR THE SUBSTRATE (e.g. SEDIMENT AND DEBRIS), AT LEAST DURING PART OF THEIR LIFE CYCLE.

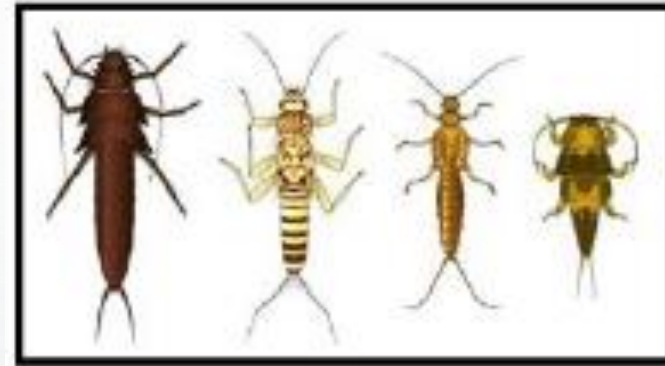


- THE MAIN TAXONOMIC GROUPS THAT LIVE IN THE AQUATIC ENVIRONMENT ARE THE ANNELIDS, MOLLUSKS, CRUSTACEANS AND INSECTS.
- THERE IS A LARGE NUMBER OF SPECIES WITH A RICH VARIETY OF SHAPES AND LIFE CYCLES.
- THEY ARE AN IMPORTANT LINK IN THE PROCESSING OF ORGANIC MATTER OF VEGETABLE ORIGIN (ALGAE, LEAVES, TRUNKS, ETC.) AND FUNCTION AS NUTRIENT CYCLING IN AQUATIC ECOSYSTEMS.
- THEY ARE ALSO THE MAIN SOURCE OF FOOD FOR MOST FISH SPECIES



PLECÓPTERO LARVAE

- **PHYLLUM:** ARTHROPODA
- **CLASS:** INSECTA
- **ORDER:** PLECOPTERA



TRICÓPTERO LARVAE

- **PHYLLUM:** ARTHROPODA
- **CLASS:** INSECTA
- **ORDER:** TRICHOPTERA



Larvas de tricópteros
(c/ casulo)



Larvas de tricópteros
(s/ casulo)



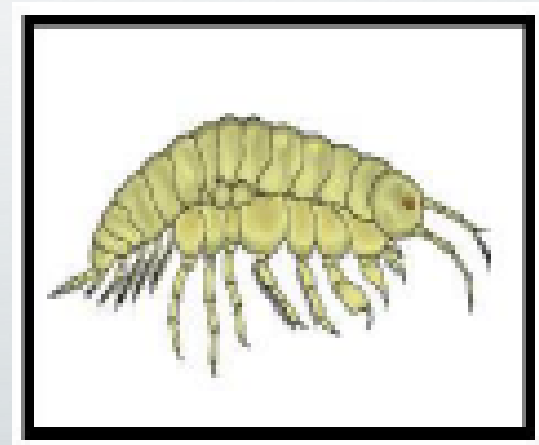
MEGALOPTERO LARVAE

- **PHYLLUM:** ARTHROPODA
- **CLASS:** INSECTA
- **ORDER:** MEGALOPTERA



ANFÍPODE

- **PHYLLUM:** ARTHROPODA
- **CLASS:** CRUSTACEA
- **ORDER:** AMPHIPODA



ISOPODES

PHYLUM: ARTHROPODA

CLASS: CRUSTACEA

ORDER: ISOPODA



CHARACTERIZATION OF THE STUDY AREA



Samplings made in 2013/2014

- Urban park in Póvoa de Lanhoso, crossed by the brook of Pontido (River Ave hydrographic).
- **Vegetation:** grass, bushes and small trees
- **Maintenance:** Municipality
- Has equipment for sports



MATERIALS AND METHODS...FIELD WORK

MATERIALS

- 1 SAMPLING POINT
- TRAWLS
- TRAYS
- BOTTLES
- PH AND TEMPERATURE MEASURE
- GOBLETS/ GLASSES.
- GLOVES AND GALOSHES
- CAMERAS (PHOTOS AND FILMING)



METHODS

- TAKE PHOTOS AND MAKE FILMS
- FORM GROUPS OF WORK (4 TO 5 ELEMENTS)
- EACH GROUP WILL DO THE FOLLOWING:
 1. With the nets scrape the margins
 2. Pour the contents into the trays
 3. Put the macro invertebrates in bottles with water from the brook
 4. Measure the water temperature and pH with a sensor





In YOUTUBE >>>>>>





IN THE LAB

1. **Observe the microinvertebrates** with a magnifier
2. **Classify** the living beings based on a grid built by teachers from the University of Porto
3. **Count the macroinvertebrates** observed and classified



DETERMINAÇÃO DA QUALIDADE BIOLÓGICA DA ÁGUA

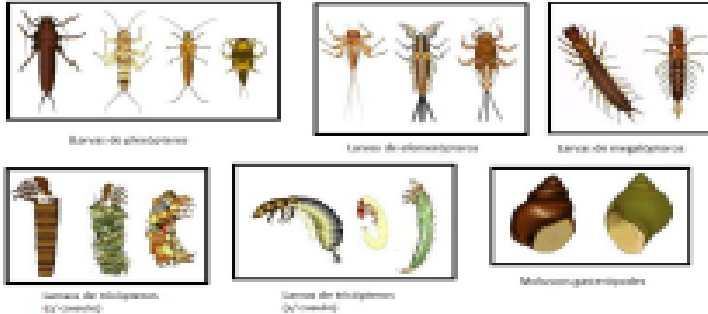
PROJECTO ÁGUA AQUAPROJECT APPA

Curso de água: _____

Data: ____/____/____

G1 = nº de grupos do tipo 1 que foram encontrados x 4
= _____

Tipo 1 – Organismos muito intolerantes à poluição



G2 = nº de grupos do tipo 2 que foram encontrados x 3
= _____

Tipo 2 – Organismos moderadamente intolerantes à poluição



G3 = nº de grupos do tipo 3 que foram encontrados x 2
= _____

Tipo 3 – Organismos moderadamente tolerantes à poluição



G4 = nº de grupos do tipo 4 que foram encontrados x 1
= _____

Tipo 4 – Organismos muito tolerantes à poluição



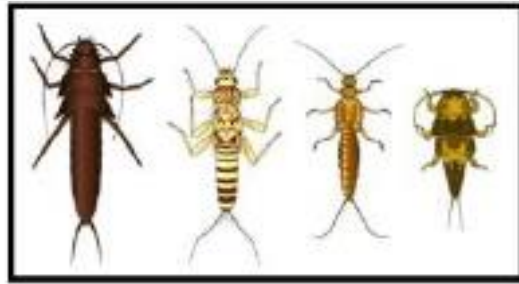
Classificação final da qualidade da água

Valor final da qualidade da água
G1+G2+G3+G4
= _____

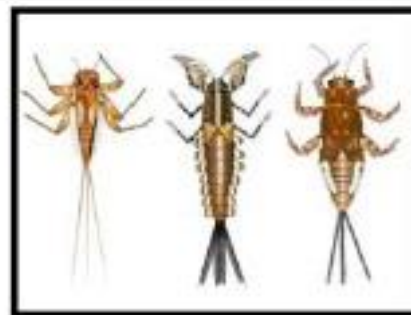
Classe 1	Classe 2	Classe 3	Classe 4	Classe 5
Excelente	Boa	Razoável	Mediocre	Má
>20	16 a 20	11 a 15	5 a 10	<5



Type 1 - Organisms very intolerant to pollution



Larvas de plecópteros



Larvas de efemerópteros



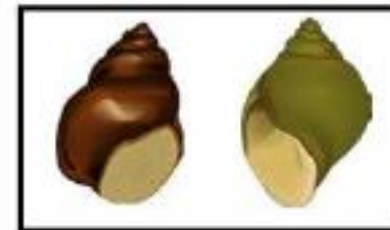
Larvas de megalópteros



Larvas de tricópteros
(c/ casulo)



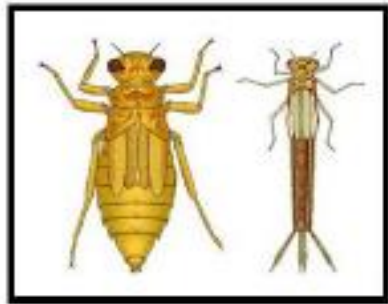
Larvas de tricópteros
(s/ casulo)



Moluscos gasterópodes



Type 2 - Organisms moderately intolerant to pollution



Larvas de odonatas



Moluscos bivalves



Larva de díptero
(tipulidade)



Isópode



Anfípode



Type 3 - Organisms moderately tolerant to pollution

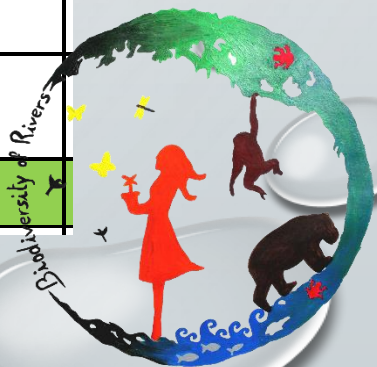


Type 4 - Organisms very tolerant to pollution



COLLECTED DATA... LAB

		09/12/2013	10/03/2014
Grupo 1	Larvas de plec6pteros	14	2
	Larvas de efemer6pteros	16	4
	Larvas de megal6pteros	1	0
	Larvas de tric6pteros (c/casulo)	45	15
	Larvas de tric6pteros (s/casulo)	6	0
	Moluscos gaster6podes	0	0
Sub. Total		82	21



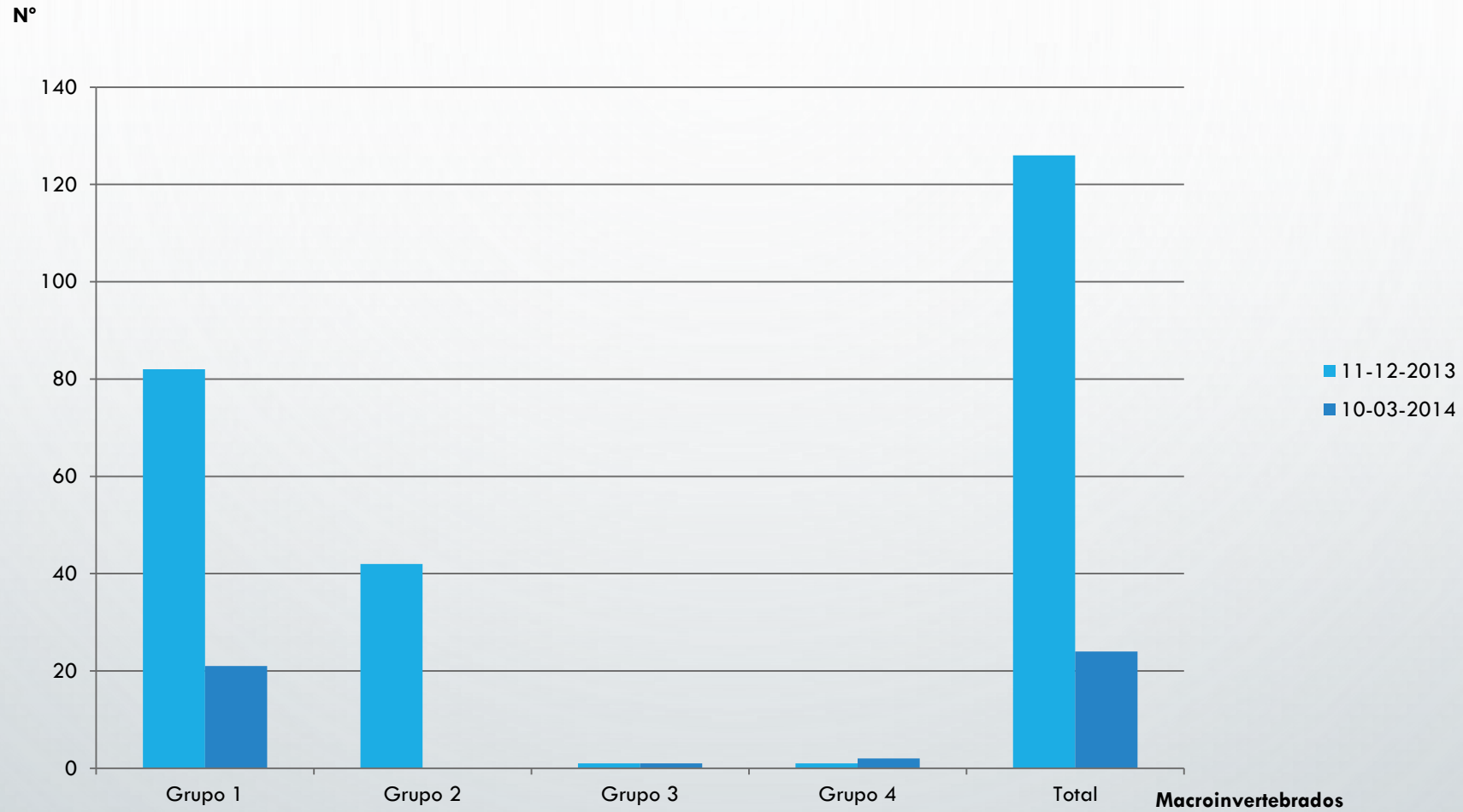
Grupo 2	Larvas de odonatas	40	0
	Moluscos bivalves	0	0
	Larva de díptero (tipulidade)	1	0
	Isópode	0	0
	Anfípode	1	0
Sub. Total		42	0



Grupo 3	Larva de díptero (chironomidae não vermelhos)	0	0
	Larva de díptero	1	0
	Sanguessuga	0	0
	Planária	0	1
Sub. Total		1	1
Grupo 4	Minhocas	1	2
	Larva de díptero (chironomidae vermelhos)	0	0
Sub. Total		1	2



Comparison between the number of macroinvertebrates collected



CONCLUSIONS

	Nº de tipos		11/12/13	10/03/14	
	11/12/13	10/03/14			
Grupo 1					
G1= Nº de tipos x4	5	3	5x4= 20	3x4=12	
Grupo 2					
G2= Nº de tipos x3	3	0	3x3=9	0x3=0	
Grupo 3					
G3= Nº de tipos x2	1	1	1x2=2	1x2=2	
Grupo 4					
G4= Nº de tipos x1	1	1	1x1=1	1x1=1	
Total			32	15	
Valor final da qualidade da água	Classe1	Classe 2	Classe 3	Classe 4	Classe 5
	Excelente	Boa	Razoável	Medíocre	Má
	>20	16 a 20	11 a 15	5 a 10	<5
G1+G2+G3+G4					

The water quality changed

- **Excellent** in December
- **Reasonable** in March

Possible reasons:

- Increasing of the amount of nutrients due to decomposition of organic matter
- Sampling errors
- Difficulty in classification

