

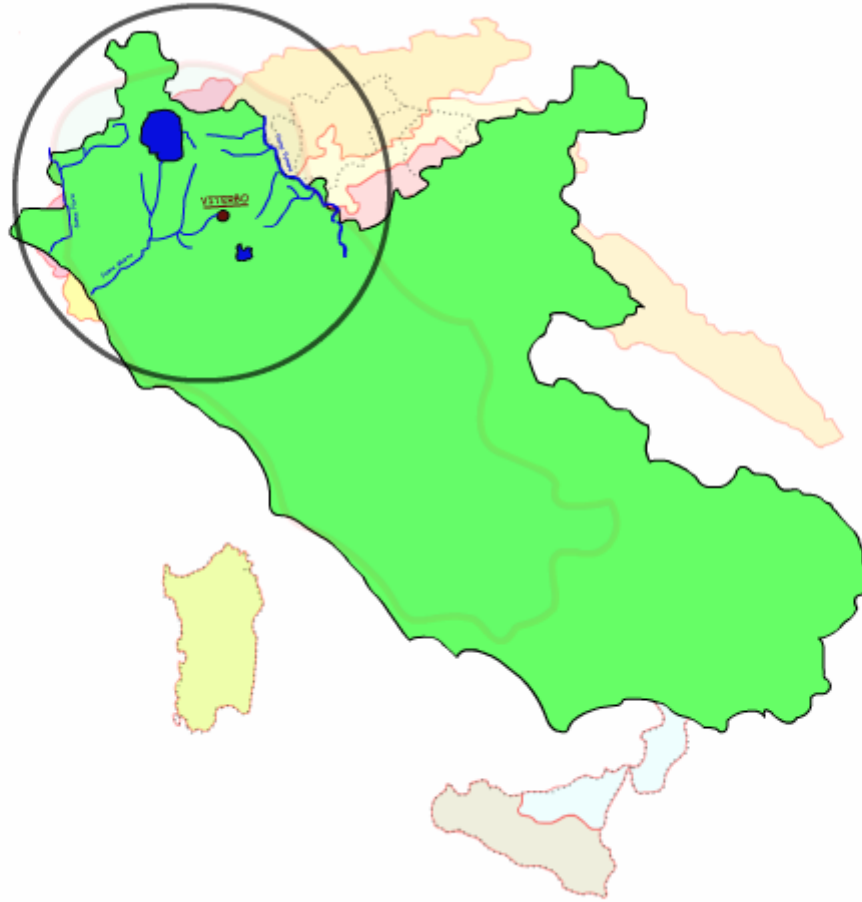
Workshop
Macroinvertebrati bentonici:
quale futuro per il monitoraggio
delle acque?

Milano, 15 Dicembre 2006
Sala Assemblee Banca Intesa

Sviluppo di moduli dedicati all'Italia centrale

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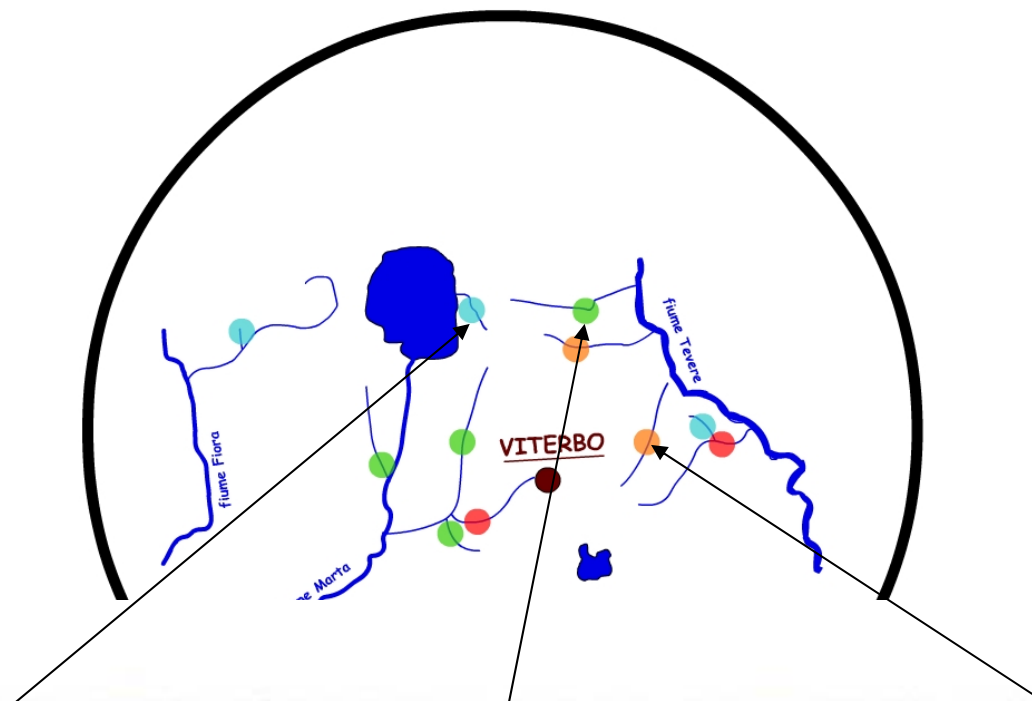


Idroecoregione: 68 (alto e medio Lazio, zona vulcanica: corsi d'acqua silicei)

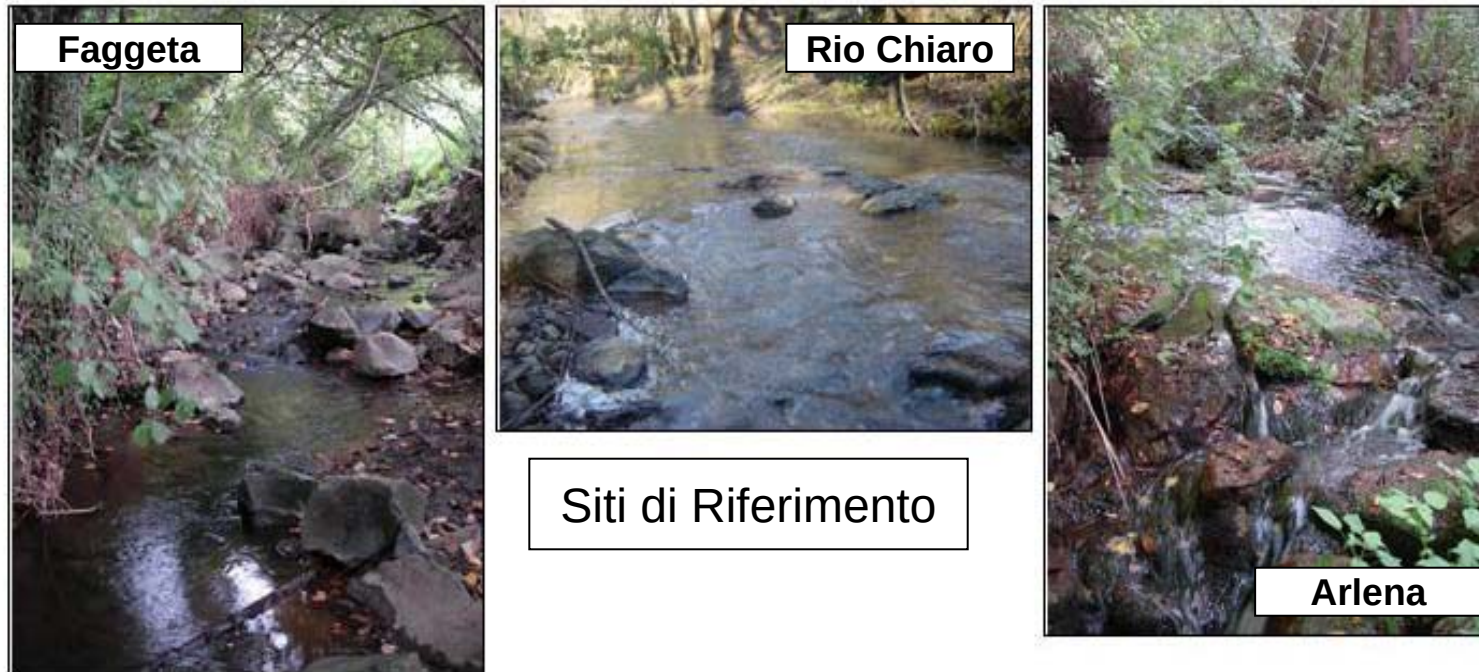
Corsi d'acqua perenni

Scorrimento superficiale/sorgivi

Distanza dalla sorgente > 20 Km:
fiumi piccoli

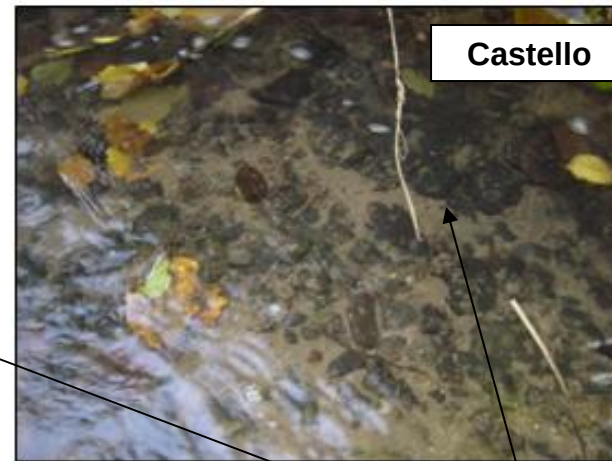


Caratteristiche (1): Substrato

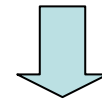


Granulometria prevalente : - Mesolithal - Microlithal - Akal -

Caratteristiche (1): Substrato



Poca diversità substrato
Akal - microlithal



Bassa diversità microhabitat

Colore acqua lattiginoso

Caratteristiche (2): Alveo



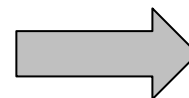
- Mesohabitat: Poca alternanza Riffle-Pool
- Tipo di flusso prevalente: Run-Riffle
- Larghezza Alveo 2-4 m
- Profondità max 0.5 m
- Profondità media 0.20

Caratteristiche (3): Uso del suolo

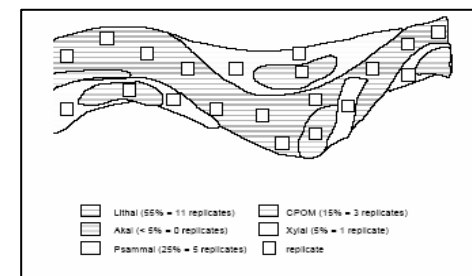
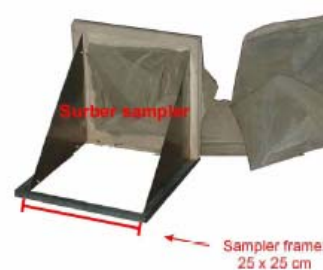


Caratteristiche (3): Uso del suolo





Ottima Applicabilità
Campionamento Surber
- quantitativo -



Campionamento per microhabitat

FIUME RISIERE				SITO Tuscania	
Data	10	10	2006	Campionatore Giorgio Pace	

cod		R	P	cod		R	P
HYG	hygropetric water on solid substrate			MAA	macro-algae filamentous algae, algal tufts		
MEG	megalithal > 40 cm			MIA	micro-algae diatoms and other algae		
MAC	macrolithal > 20 cm to 40 cm			SUB	submerged macrophytes macrophytes incl. moss & Characeae	1	
MSO	mesolithal > 6 cm to 20 cm	1		EME	emergent macrophytes(Thypha, Carex)		
MIC	microlithal > 2 cm to 6 cm	4		TPL	living part of terrest. plants fine roots, floating riparian vegetation	1	1
AKA	akal > 2 mm to 2 cm	3	3	XYL	xylal (wood) dead wood, branches, roots		
PSA	psammal > 6µ to 2 mm		3	CPO	CPOM coarse particulated organic matter	1	2
ARG	argyllal < 6			FPO	FPOM fine particulated organic matter		
ART	artificial			DEB	debris organic and inorganic matter deposited within the splash zone area		
				SEW	Sewage bacteria, fungi and sapropel		

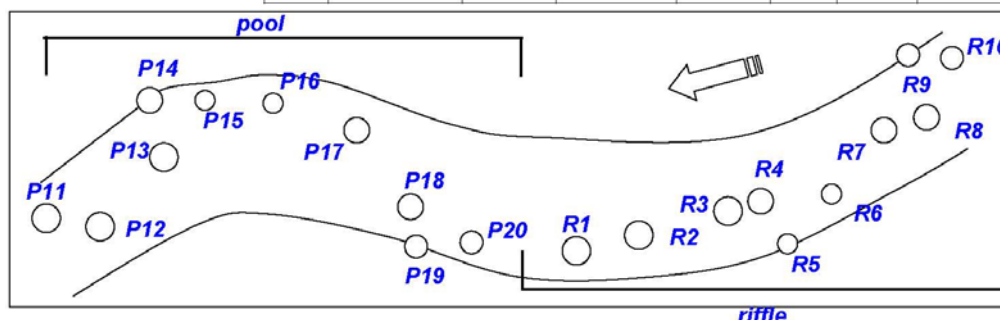
RIFFLE

FlowType [FT]	
FF	Free Fall
CH	Chute
BW	Broken Wave
UW	Unbroken wave
CF	Chaotic flow
RP	Ripples
UP	Upwelling
SM	Smooth
NP	Not perceivable
NO	Not Observed

Functional Habitat [FH]	
Riffle	
Pool	
Bed	Bedrock
TRA	Transition
RCM	Riva con Macrofite
RSM	Riva senza
RR	RunRiffle

POOL

	Microhabitat	FT	Depth cm	Vcm/s	FH	Dist SN	Dist. DX
R1	MSO	UW	17	60	Rif	120	22
R2	MIC	RP	14	45	Rif	48	100
R3	MIC	RP	22	55	Rif	60	85
R4	AKA	SM	18	40	Rif	90	75
R5	TPL	RP	6	45	RSM	0	135
R6	CPO	SM	24	48	RR	40	90
R7	MIC	SM	27	32	Rif	75	65
R8	MIC	RP	13	70	Rif	70	70
R9	AKA	SM	17	55	RSM	150	0
R10	AKA	RP	20	60	Rif	135	20
P11	AKA	SM	24	28	Pool	110	30
P12	PSA	SM	20	20	Pool	65	80
P13	AKA	RP	18	32	Pool	90	50
P14	TPL	NP	18	0	RSM	160	0
P15	PSA	NP	23	0	Pool	135	12
P16	PSA	RP	16	28	RR	120	25
P17	AKA	SM	27	14	Pool	90	30
P18	CPO	SM	14	12	Pool	40	95
P19	SUB	NP	17	0	RCM	0	155
P20	CPO	SM	18	16	Pool	30	120



SCHEDA CAMPIONAMENTO

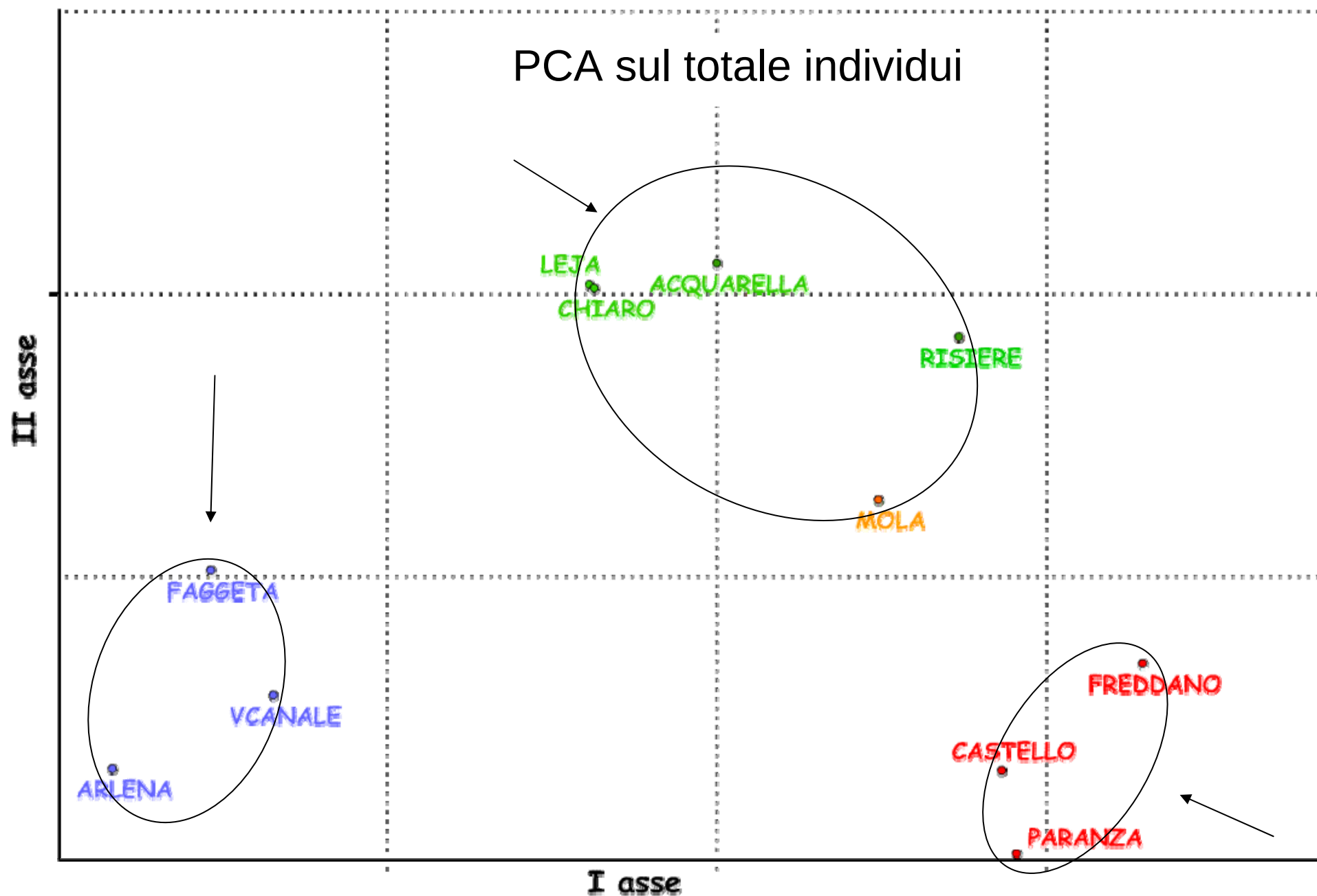
71 taxa

taxon	acquarella_05/10/2006	arlenaref_13/10/2006	castello_11/10/2006	chiaroref_06/10/2006	faggetaref_09/10/2006	freddano_16/10/2006	leja_04/10/2006	mola_12/10/2006	paranza_17/10/2006	risiere_18/10/2006	vcanale_10/10/2006
Leuctra	41	181	1	150	285		457	4	1	12	599
Protonemura		65		1	16		6	276			
Taeniopteryx				9	2						
BERAEIDAE	2										
GOERIDAE		1			4						3
HYDROPSYCHIDAE	295	373	56	19	57	133	70	868	10	240	202
LEPIDOSTOMATIDAE	6	12		2	46					4	
LEPTOCERIDAE	15			1	53					5	
LIMNEPHILIDAE				1							
ODONTOCERIDAE	1	28									
PHILOPOTAMIDAE		14			33			2			
POLYCENTROPODIDAE	1	10	1		12						1
PSYCHOMYIIDAE		2			2			1			
RHYACOPHILIDAE	11	1	6			1	2	66		2	7
SERICOSTOMATIDAE	7	97		8	7		117	14			
Baetis buceratus			6			181	58			42	
Baetis muticus/digitatus		195			6		2	4	1		94
Baetis rhodani	4	55	921	35	144	1	64	126	13	5	37
Baetis_OU1	8		80								35
Baetis_OUA	13		4			3				3	18
Baetis_OUB	4										
Caenis_OU1		103	64		160		4		58		392
Caenis_OU5	39			42		3	24	629		61	
Centroptilum		249			73					1	2
Ecdyonurus gr. venosus	9	193		15	147	1	8	65	3	3	397
Ephemera		222		30	597		15		1		152
Habroleptoides				1	16						145
Habrophlebia		81			3						
Heptagenia	24			18	5		63	9		23	3
Paraleptophlebia		57			44		12				139
Serratella	6	17					2			2	

DRYOPIDAE	15		5	1	28	1	5	2	1	6		
DYTISCIDAE								1				
ELMIDAE	29	26	2	33	12		16	7	2	4	129	
GYRINIDAE	2	26		3	1		15	1			7	
HYDRAENIDAE	3	15	1	3	8			5			43	
SCIRTIDAE		60			9		1				151	
Calopteryx	36	39	9	35	11	85	27	13		28	41	
Cordulegaster		2			7			3	4		4	
Onychogomphus	16			4	68		33			39		
Platycnemis		27					2					
ATHERICIDAE	4	24		10	65		1		2		31	
CERATOPOGONIDAE	5		13	1	30			3	2	1		
CHIRONOMIDAE	293	179	429	63	90	593	95	249	1574	211	20	
DIXIDAE	9	3		8	1		2				17	
LIMONIIDAE	10	7	1	9	4		6	4			10	
PSYCHODIDAE								1	1			
PTYCHOPTERIDAE		6						1				
SIMULIIDAE	18	90	1920	5	8	617	30	11	1055	37	79	
TABANIDAE		1		2		1	1	1	1		1	
TIPULIDAE	1			1	5		2			8	1	
NEPIDAE								2				
ASELLIDAE		494	10			11		4	64			
GAMMARIDAE	344	1139	11	524	3		268				90	
POTAMIDAE											4	
ANCYLIDAE				5	12		1			1	3	
BYTHINIIDAE								10				
HYDROBIIDAE	8	128		21	7		1	26				
PHYSIDAE						1		15		3		
PLANORBIDAE								1				
SPHAERIIDAE								2				
Dugesia	67	320	2	134	66	1	188			167	13	
Dina		3	23			18		16	45	1		
Helobdella			2						3			
Limnatis			1									
LUMBRICIDAE	4	1	1	1			1	8		1		
LUMBRICULIDAE			4					1		13		
TUBIFICIDAE	4	86	162	18	6	19	1	4	129	2	11	
SIALIDAE		23			20							
GORDIIDAE								1				
MERMITHIDAE						1						
totale	1354	4655	3735	1213	2173	1671	1600	2456	2970	925	2881	25633

arl	4655
cas	3735
par	2970
vca	2881
mol	2456
fag	2173
fre	1671
lej	1600
acq	1354
chi	1213
ris	925
	25633

PCA sul totale individui



correlazione con parametri abiotici

	I	II	III	IV	V
O ₂	-0.24624	0.396353	0.239476	0.088355	-0.27715
%sat	-0.25771	0.69049	0.548716	0.14851	0.08472
BOD	0.396884	-0.37395	0.028276	-0.32643	-0.12354
COD	0.385533	-0.21222	0.25368	-0.39756	-0.39675
Ptot	0.562551	-0.48374	0.142436	0.05092	0.27357
NH ₄	0.488211	-0.53837	-0.03803	0.095944	0.124335
NO ₃	0.534917	-0.12088	0.068295	-0.19321	0.488955
cond	0.287792	0.21471	0.047746	0.215789	-0.18356
pH	0.277642	0.547755	-0.42369	0.185427	-0.49871
microb	0.752672	0.227245	0.150378	0.366306	-0.07979
%var	36.124	18.871	12.429	9.0325	8.1592

