All species of Trichoptera and Ephemeroptera found in these samples are common species, which are able to live in very eutrophic water. All these species are characteristic for stagnant water except only one: *Neureclipsis bimaculata* is a typical rheophilic species, living in rivers. One specimen of this species was found in a qualitative sample on a place of point A, where the river water was flowing into the pojma.

summer

	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F4	G1	G2	H1	H2	I	K1	K3
cf. Agrypnia picta											1								
Athripsodes aterrimus					1	1													
Holocentropus dubius							1		1										
Holocentropus picicornis															1				
Phryganea bipunctata									2										
Phryganea grandis											1								
Triaenodes bicolor					1	3		1	13	1	7	7	3					7	1
Tricholeiochiton fagesii																			1c

	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F4	G1	G2	H1	H2	I	K1	K3
Caenis		13	1				5	3	1	2	1		1	8		19	1	2	11
Cloeon dipterum		8	5	56	280	170	21	49	135	64	86	36	205	153	8	19	36	46	22

In August and September no larvae of rheophilic species have been found. *Cloeon dipterum* was much more common than in spring. This is a normal situation, because of the fact that in winter many larvae are lost. Most of the Trichoptera species are more common in mesotrophic conditions. This is especially the case for *Holocentropus dubius*, a species in the Netherlands nearly confined to acid or mesotrophic water bodies (Verdonschot e.a.,1992; Steenbergen, 1993). However the numbers met with in our samples are really low. If mesotrophic water bodies had been included more species and larger populations of Trichoptera would have been found.

4.2.8. Syrphidae (Hoverflies)

Methods

At every samplesite, hoverflies were sampled in two different ways. The first method consisted of walking around at the site, while observing hoverflies by sight and catching them with a net. After a while, when no more additional species were found, the net was swept through the vegetation along the water. This method is especially suitable for collecting small or little mobile species. The 'sweeping' was done after the 'observing' because sweeping is more or less disturbing for the habitat.

Collected specimens are preserved in the collection of M. Reemer (the Netherlands).

4.2.8.1. Number of species identified

At the samplesites, **53 species of Syrphidae were observed** (Table 12). The species are divided into four groups, according to their larval feeding-habits: predacious species (PR) (most of which live on plants), phytophagous species (PH) (living in parts of plants), saprophagous (SA) (living in dead wood etc.) and aquatic or semi-aquatic (AQ). This division is clear for many species, but somewhat artificial for some. In particular, the distinction between saprophagous and aquatic species is not always straightforward. Strictly, every 'aquatic' species in this table should be considered as saprophagous, because the larvae filter micro-organisms from their surroundings. Some species, however, obtain these micro-organisms from muddy water (*Eristalis*-species), while others live under treebark (*Xylota*-species). A relatively large proportion of the aquatic species spends the larval stages in decaying matter at the edge of marshes, pools etc.

23 species are predacious, 21 species have aquatic larvae, six species are saprophagous and two are phytophagous.

Table 14: Hoverfly-species oserved at the samplesites (total number of species = 53).

	4	7	2	8	9	1	3	6	10	5	Larvae
Xanthogramma pedissequum			1								PR
Episyrphus balteatus			1								PR
Syrphus ribesii	4								1	2	PR
S. vitripennis			1								PR
Epistrophe eligans										2	PR
E. nitidicollis								1			PR
Chrysotoxum festivum	1										PR
Eupeodes corollae	1		2			1		1	1		PR
E. latifasciatus			2			1			1		PR
E. nielseni										1	PR
S. scripta	3	3	1		2	20	1		x	2	PR
S. taeniata		2								1	PR
Platycheirus angustatus			1								PR
P. clypeatus	12	12		5	4	15	3	6		6	PR
P. immarginatus / perpallidus *	1			3		x	3		x	4	PR
P. peltatus (?)				2		1			1		PR
Pyrophaena granditarsa							1				PR
Melanostoma mellinum	4								2	1	PR
Pipizella varipes									1	1	PR
P. spec.			1			1	1				PR
Trichopsomyia flavitarse											PR
Cheilosia mutabilis								1			PH
Chrysogaster aerosa								3		2	AQ
Neoascia tenur										4	AQ
Eumerus sogdianus / strigatus			1			1					PH
Microdon eggeri				1						1	PR
Xylota. florum					1						SA
X. sylvarum				2					1		SA
Chalcosyrphus nemorum					1	1		1	2	1	SA
Syritta pipiens			3			5			x	15	SA
Temnostoma apiforme									1		SA
T. vespiforme				1							SA
Helophilus hybridus	2			2				1	x	5	AQ
H. pendulus										1	AQ
H. trivittatus	2	1	2	1					x	15	AQ
Anasimyia contracta									1		AQ
A. interpuncta			1				1		1		AQ
A. lineata	1				15		2	x	1	80	AQ
A. lunulata										1	AQ
A. transfuga									1	1	AQ
Parhelophilus consimilis				1					1	1	AQ
P. versicolor										5	AQ
M. tricolor				2							SA
Eristalis abusiva	3	2	1			4	2			1	AQ
E. arbustorum									1	2	AQ
E. horticola										2	AQ
E. intricaria		3									AQ
E. nemorum			1								AQ
E. picea	1							1			AQ
E. vitripennis				1							AQ
Eristalinus sepulchralis	20	1	1	2	2	1	7		x	10	AQ
Myathropa florea			1					1		2	AQ
Tot. species	13	7	16	12	6	12	9	10	21	27	

*: The identity of these specimens is not clear yet. Possibly both species are collected.

4.2.8.2. Taxonomic and ecological groupings

Species associated with aquatic habitats

26 species associated with aquatic habitats are considered (Table 13). These species have been divided into two groups. Species group 1 contains the species with (semi-)aquatic larvae (21 species). These are the aquatic species in table 12. The larvae of most of these species live in mud or decaying matter at the margins of bodies of water.

Species group 2 contains predacious species which are associated with swamps and marshes, but do not have an aquatic larval habitat (5 species). The larvae of these species feed on aphids. Often these Syrphid-species are specialised on aphid-species which are specialised on certain plant-species. For instance, the larvae of *Platycheirus immarginatus* and *P. perpallidus* only feed on aphids of *Carex*-species in wetlands.

Table 15. Numbers of hoverfly species associated with aquatic habitats observed at the samplesites. (x = present in unknown numbers)

Site	4	7	2	8	9	1	3	6	10	5	Eco
Species group 1											
Chrysogaster aerosa								3		2	**C**
N. tenur										4	**C**
S. silentis				1		1				1	**C**
Helophilus hybridus	2			3		1		3	x	5	**C**
H. pendulus					1	2				5	**E**
H. trivittatus	3	1	2	1		10			x	15	**E**
Anasimyia contracta									1		**C**
A. interpuncta			1				1		1		**C**
A. lineata	1				15		2	x	1	80	**E**
A. lunulata										1	**C**
A. transfuga			1						1	1	**C**
Parhelophilus consimilis				1					1	1	**C**
P. versicolor										5	**C**
Eristalis abusiva	3	2	1		2	1	2			1	**E**
E. arbustorum					4	1	1	1	1	2	**E**
E. horticola										2	**E**
E. intricaria		3		1	1						**E**
E. nemorum			1			2					**E**
E. picea	1							1			**C**
E. tenax					7	10		1		1	**E**
E. vitripennis				1				1			**C**
Species group 2											
Platycheirus angustatus			1								**E**
P. clypeatus	12	12		5	4	15	3	6		6	**E**
P. immarginatus / perpallidus	1			3		x	3		x	4	**C**
Pyrophaena granditarsa	4		5		2	4	5	1	3		**C**
P. rosarum			1			1		1	1	2	**C**
Tot. Species	**7**	**4**	**8**	**8**	**9**	**13**	**7**	**11**	**12**	**19**	

In the last column of table 13, a rough division is made between eurytopic and more or less critical species. The letter E indicates common species without a clear preference for a certain type of habitat, whereas the C indicates more critical species.

The samplesites have been grouped in four clusters, given in table 16. In table 17, the number of species per cluster of samplesites is given. For each cluster, this number is divided into eurytopic species and critical species.

Table 16. Clusters of samplesites, from A to K

Cluster	*Samplesite*	*Description*
1	4, 7, 2	Inner flood plains near Hvoyensk and Pererov.
2	8, 9	Wooded flood plains near Hlupin.
3	1, 3	Outer flood plains near Hvoyensk and Pererov.
4	6, 10, 5	Sites out of the flood plains near Hvoyensk.

Table 17. Distribution of numbers of eurytopic and critical species over the clusters of samplesites.

Cluster	*# aquatic spec.*	*# eurytopic aq.*	*# critical aq.*
1	14	7	7
2	15	8	6
3	15	8	6
4	24	8	15

Most of the species found near or in the flood plains are considered eurytopic and common, while a larger proportion of the species on sites further from the river is confined to particular habitats and (therefore) less common.

Species associated with non-aquatic habitats

In table 16 the numbers of Syrphid-species with non-aquatic larval habitats are given per sample site. A distinction is made between species with predacious larvae (feeding on aphids) and species associated with dead wood.

Table 18. Number of predacious and dead wood-dwelling species per samplesite.

Site	4	7	2	8	9	1	3	6	10	5
Predators *	7	3	8	3	2	7	5	3	8	9
Dead. wood	0	0	1	2	3	3	0	2	5	3
Phytophagous	0	0	1	0	0	1	0	1	0	0

*: the five predacious species already considered in table 1 are excluded

In species with predacious larvae, no clear tendency is visible. The number of species associated with dead wood seems to increase with decreasing influence of the river. This would not seem to be surprising, considering the fact that the area covered by forest near the river is relatively small.

A surprisingly low number (two) of phytophagous species was found at the samplesites. Only single specimens were found. .

4.2.8.3. Conclusions

The observed numbers of individual species are too low to draw any conclusions concerning particular species. However, the overall view is interesting. The data seem to suggest the following (very preliminary!) conclusions:

- The number of species associated with aquatic habitats increases with decreasing influence of the river;
- Most of the species associated with aquatic habitats found in or near the flood plains are eurytopic and common;
- A relatively large part of the species associated with aquatic habitats found out of the flood plains is confined to particular habitats and less common;
- The data do not reveal a relation between the number of predacious species and the influence of the river;

- Species-richness of species associated with dead wood seems to increase with decreasing influence of the river.

The number of eurytopic species is constant with changing influence of the river, while the number of critical species seems to be twice as high on sites out of the flood plains. Possible explanations for the larger number of critical species on sites out of the flood plain might - for instance - be found in the lower extent of hydro- and morphodynamics (higher stability), the less eutrophic character of the water, etc. The larvae or pupae of many Syrphid-species hibernate in soil or litter. Probably they are not capable of surviving long periods of flooding.

Very little is known about the preferences of Syrphidae in relation to hydrochemical properties of their larval habitats, so it is not yet possible to use the species as indicators for certain hydrochemical parameters.

General notes on the Syrphid-fauna of the Pripyat-plains

The Pripyat-plains and their surroundings form a very interesting habitat for Syrphid-flies. Some of the species found, are considered to be rare and threatened on a European level (Speight 1999). Examples of these species are *Anasimyia lunulata, Mallota tricolor, M. megilliiformis* and *Eristalis cryptarum*. (Some of these species were only recordes on sites not included in the research-project for RIZA.)

A very intersting and valuable type of habitat is the hardwood alluvial forest, as visited near Hlupin (site 8). This habitat has rapidly disappeared from large parts of Europe during the 20th century, which may explain the rarity of some of the species occurring here (i.e. *Mallota tricolor*).

4.2.9. Megaloptera

Only once a larva of *Sialis lutaria* has been found, in sample **D2**, 4th of September. It is not clear, why this species is so rare, though the specific habitat, muddy bottoms, are very common.

4.2.10. Hydrachnellae

There were 22 samples which need to be identified. 22 samples are from spring water bodies and 16 ones are from summer pools

4.2.11. Oligochaeta

We keep for identification 38 samples with very numerous specimens (22 were spring samples and 16 were summer ones).

4.2.12. Hydrozoa

To this group of rather small organisms little attention has been paid. In spring 1 specimen of Hydra was found in the sample of F2 and 1 specimen in H2; further about 100 specimens were seen at station F3.

4.2.13. Turbellaria

Tricladida were rather common in the quantitative samples. They were identified in the field (magnification 10 x). Only two species have been found: *Dendrocoelum lacteum* and *Dugesia lugubris*. Both were more common in spring.

The other species belong to the Rhabdocoela. As a rule small Rhabdocoela will have been overlooked and were not identified.

The known ecology of the species give no possibility for important conclusions.

spring

	A1	A2	A3	B1	B2	C1	C2	D	E1	E2	F1	F2	F3	F4	G1	G2	G3	H1	H2	H3	I	K1	K2	K3
Dendrocoelum lacteum		4				1	3	2	3	3		1				1								
Dugesia lugubris		3								2			1			2								
Mesostoma									1															
small Rhabdocoela						4																		

autumn

	A1	A2	A3	B1	B2	C1	C2	D	E1	E2	F1	F2	F3	F4	G1	G2	G3	H1	H2	H3	I	K1	K2	K3
Dendrocoelum lacteum											1													
Dugesia lugubris						(3)																		
Dalyellia viridis										1														

4.2.14. Lepidoptera

Only very few aquatic Lepidoptera larvae have been found. Because of the fact, that most larvae or living near the surface, most of them have been encountered in qualitative samples. All larvae have been found in summer samples as follows:

Cataclysta lemnata 2 larvae in H 1 (qualitative sample)
Elophila nymphaeata 1 larva in C 2
2 larvae in E (qualitative sample)
Paraponyx statiotata 1 larva in E (qualitative sample).

All these species are rather indifferent to water quality.

4.2.15. Hirudinea

We sampled a lot of Hirudinea speciments, which are in 30 samples opened for identification. 16 samples are from spring pools and 14 ones are from summer pools.

In spite of that we identified a few species as:

Hirudo medicinalis, Glossiphonia complanata, Boreobdella verrucata.

4.2.16. Amphibia

In area investigated live mostly **10 Amphibia species.** They are *Pleobates fuscus, Hyla arborea, Bombina bombina, Bufo bufo, Bufo viridis Runa terrestris (=arvalis), Rana remporaria, Runa esculenta-complex, Triturus vulgaris* and *T. cristatus*.

The dominatn species are *Runa esculenta-complex, R. arvalis* and *B. bufo*. A little bit less population density (about 32 ind/ha) have *P. fuscus, H. arborea, B. bombina.*

In the water bodies investigated quantatative samples had *Rana arvalis* larvae (27 ind/m2) and *R. temporaria* (2 ind/m2) and inG3 water body (27/05/99). Beside that it was *B. bombina* larvae (9,5 ind/m2), *R.terrestris* (3.5 ind/m2) and *Triturus vulgaris* (0.5 ind/m2) in pool I (05/06/99).

5. General discussion

5.1. Total number of species

The list of species for nowadys from water bodies investigated includes **705 species** from different groups (Tabl. 19). No doubt that a lot of species will be add in after the identification of additional groups from preserved samples.

Nevertheless, the identifited species had diffefent faunistic representation. The most numerous taxa was Insecta, second place kept Rotifera and the next one was Crustacea (Fig. 40). In total we must admit that fauna of the water bodies investigated was rich both in species number and in population density of many species. In total the faunistic complex in 2-3 times more rich that in analogicl pools at more industrial zones of Belarus (for example >340 species for temporary pools at Minsk area) (Nagorskaya et all., 1998; 1999).

Table 19. Species number in different investigated groups

Taxa	Species NN
Rotatoria	204
Mollusca	43
Ostracoda	42
Cladocera	38
Copepoda	25
Gammaridae	2
Asellidae	1
Laeviocaudata	1
Notostraca	1
Chironomidae	98
Trichoptera	11
Ephemeroptera	2
Odonata	43
Coleoptera	82
Heteroptera	23
Syrphidae	53
Hirudinea	(>3)
Lepidoptera	3
Turbellaria	4
Megaloptera	1
Amphibia	10
other Diptera	15
Total:	705

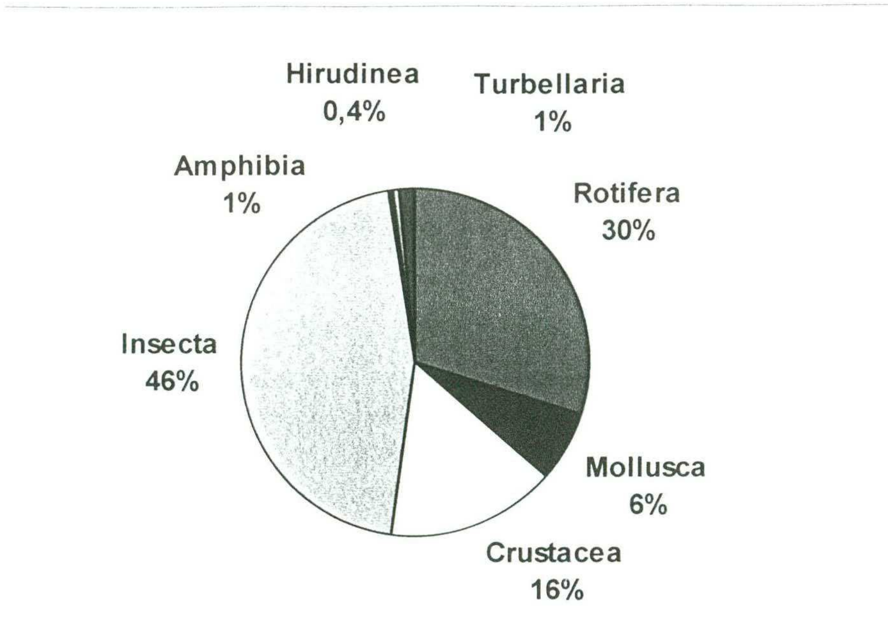
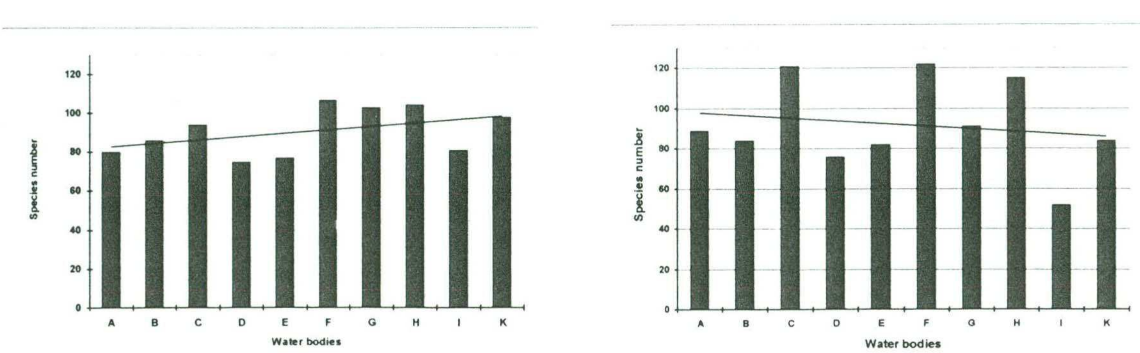


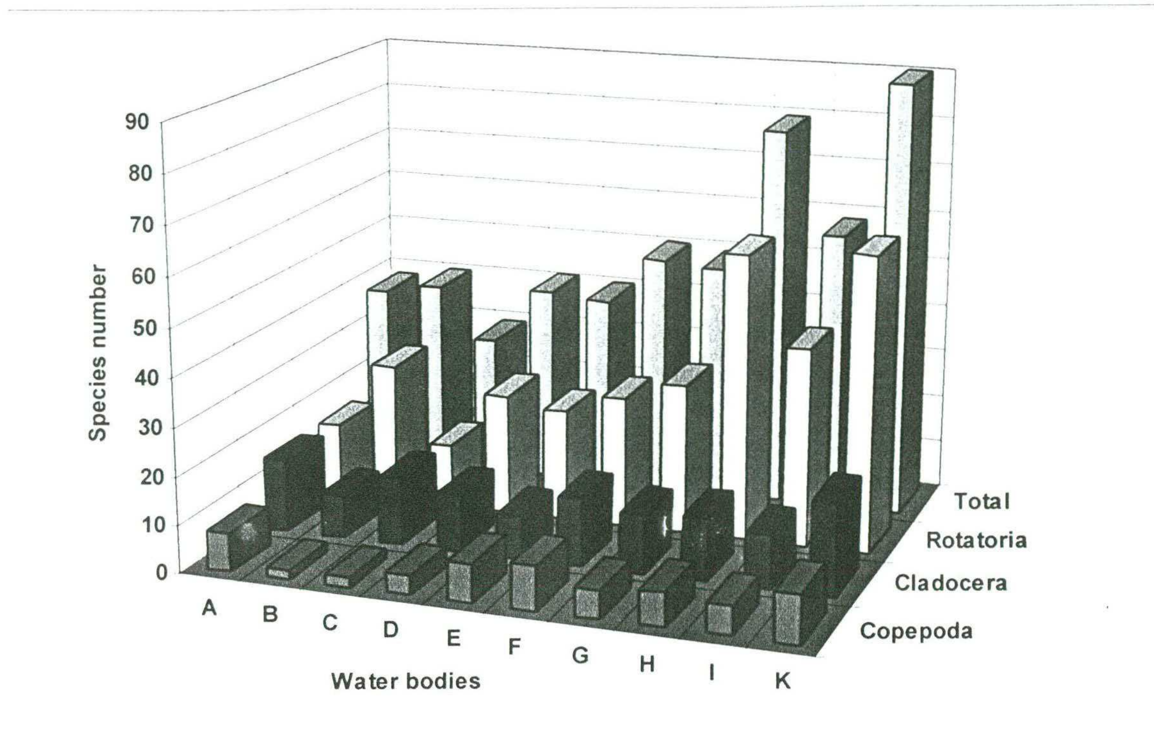
Figure 40. The relation between taxa from water bodies investigated

Species number which were in every pool in the moment of the sampling is shown on the figure 41. It is interesting that trend in spring shows the species number increasing along pools gradient. And quite the reverse, trend is negative with the distance from the river bed in summer . The total species number per pool had not significant differences (F=0,31) between spring and summer samplings.

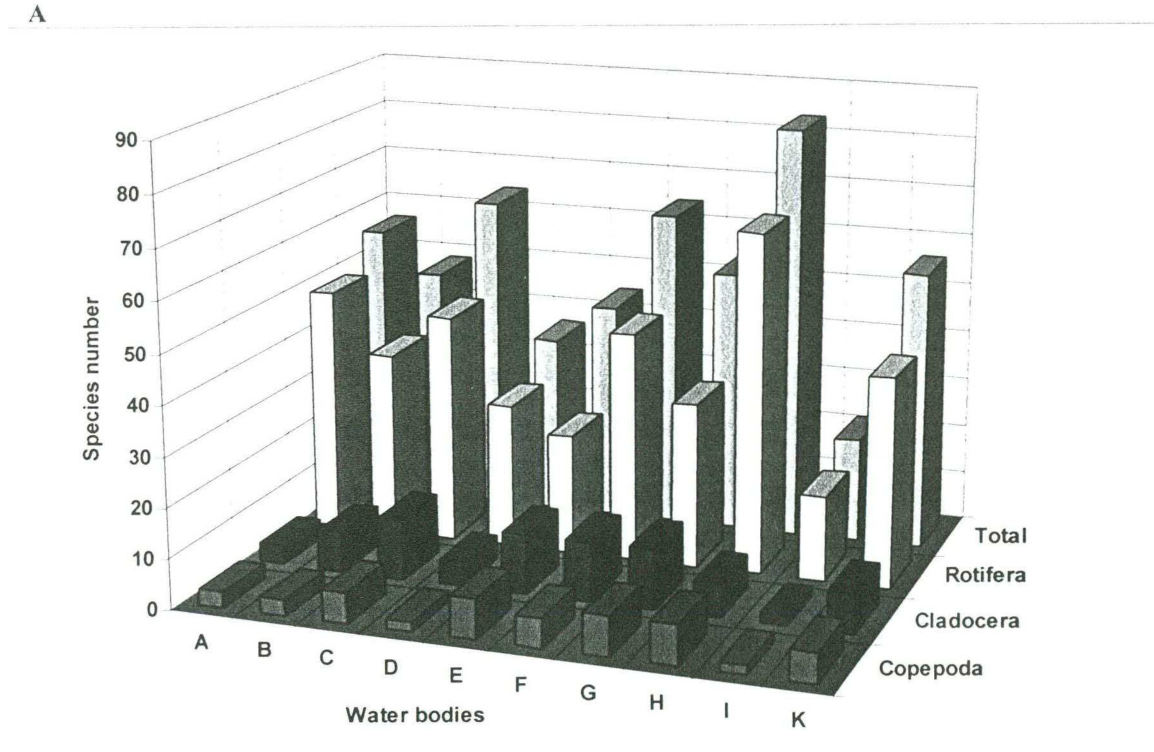


A B

Figure 41. Total species number along water bodies gradient (A - spring; B - summer)

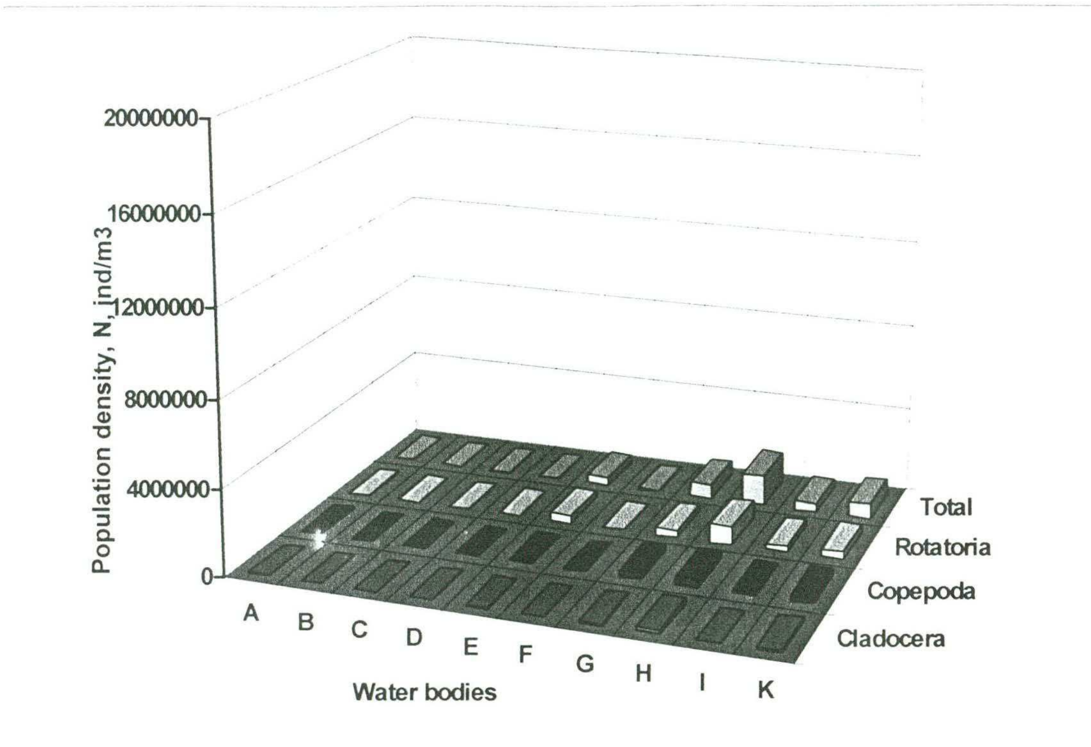


A

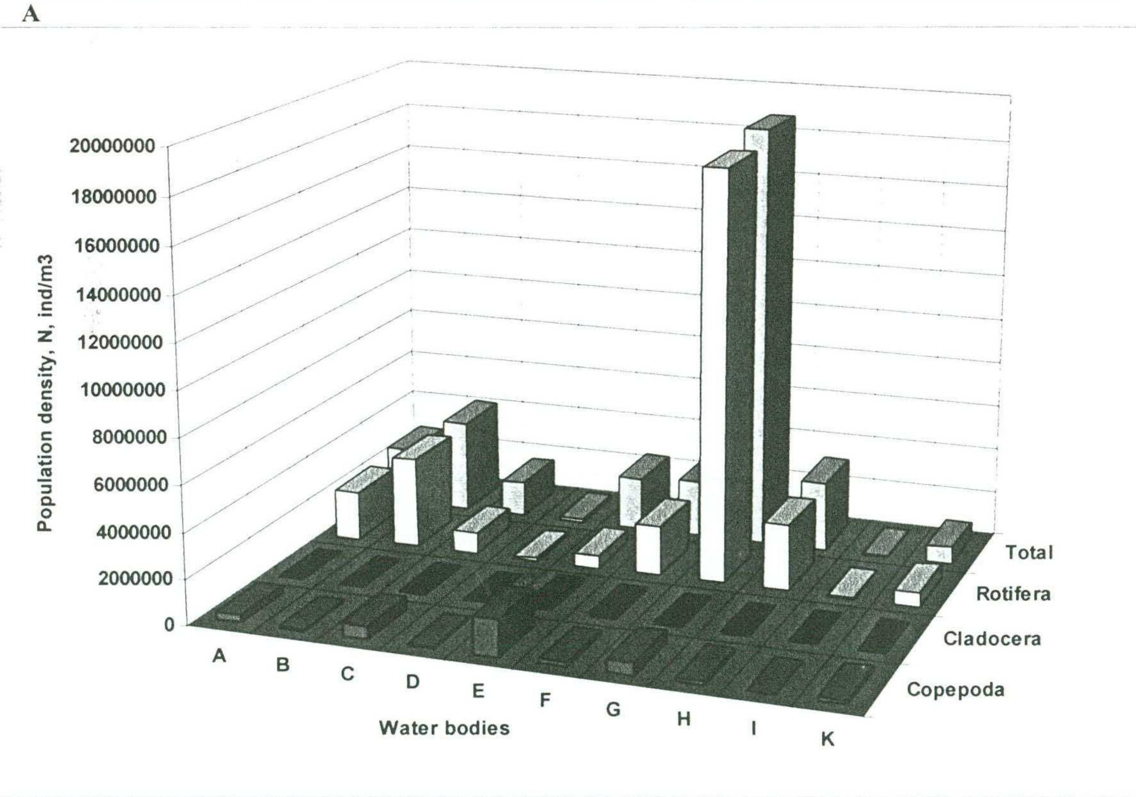


B

Figure 42. Species number of plankton groups along water bodies gradient; A - spring; B - summer

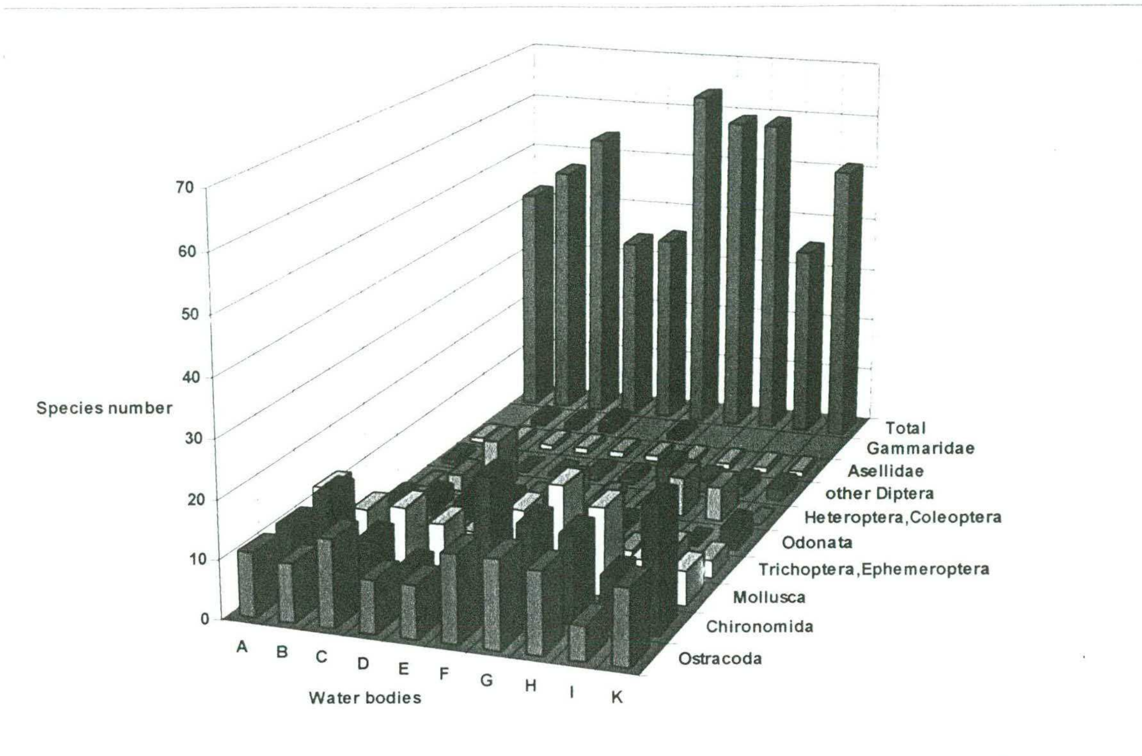


A

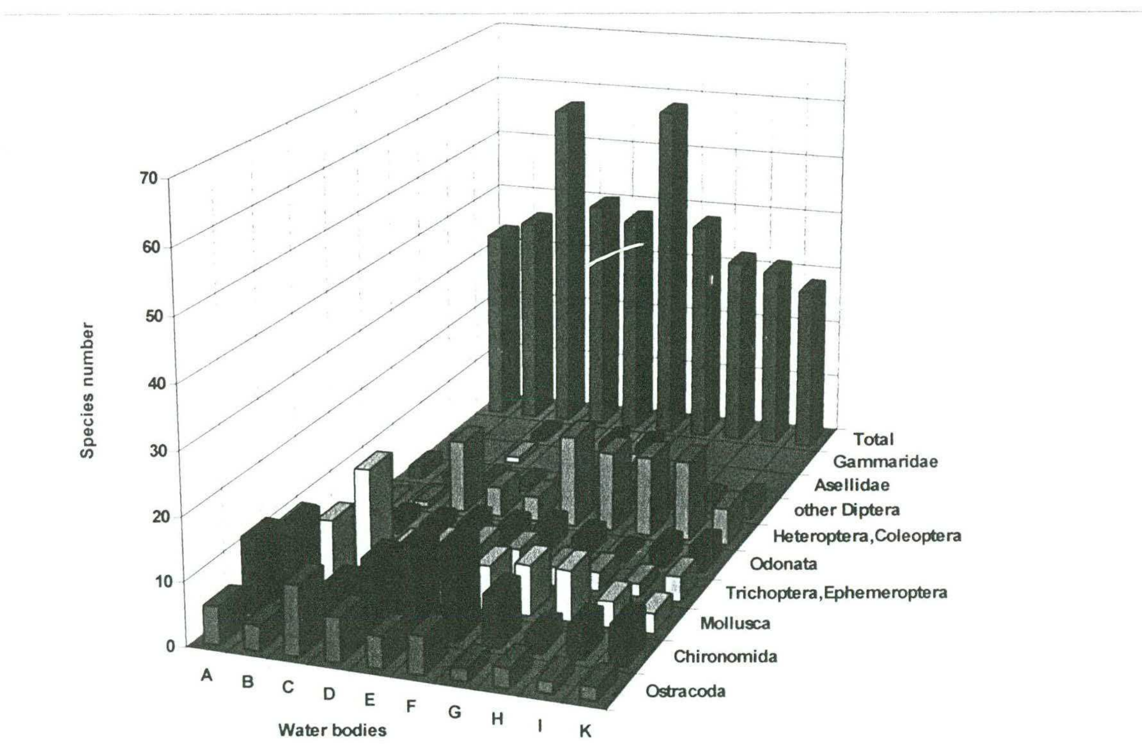


B

Figure 43. Population density of plankton along water bodies gradient : A - spring; B - summer

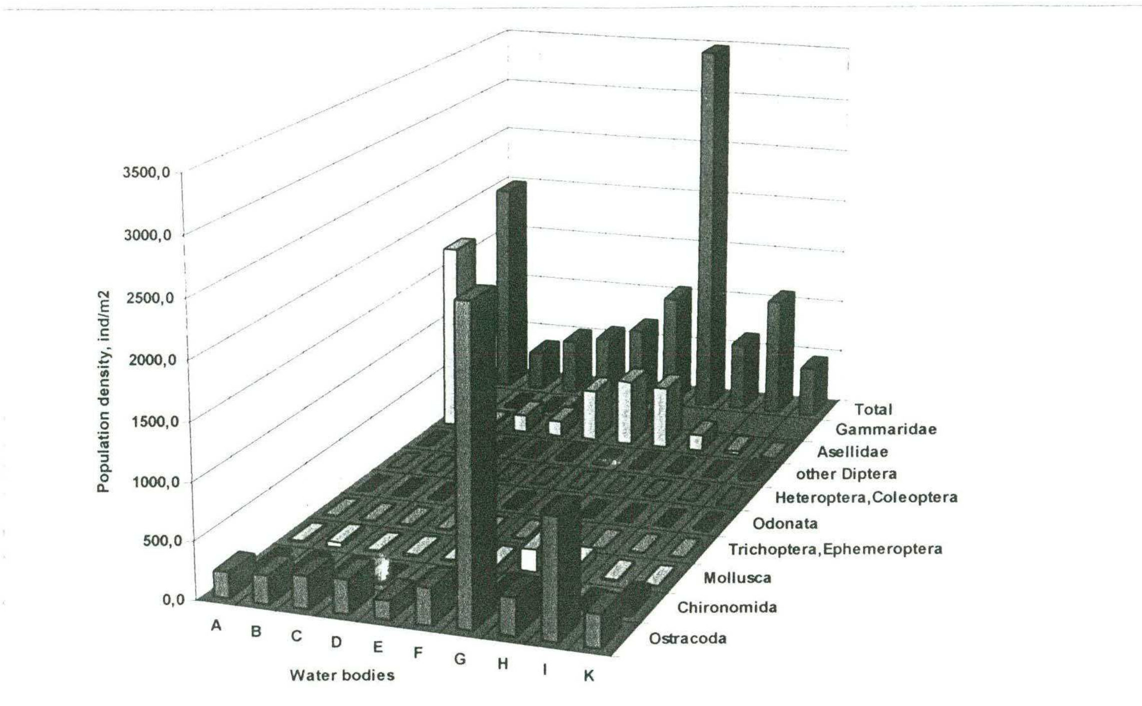


A

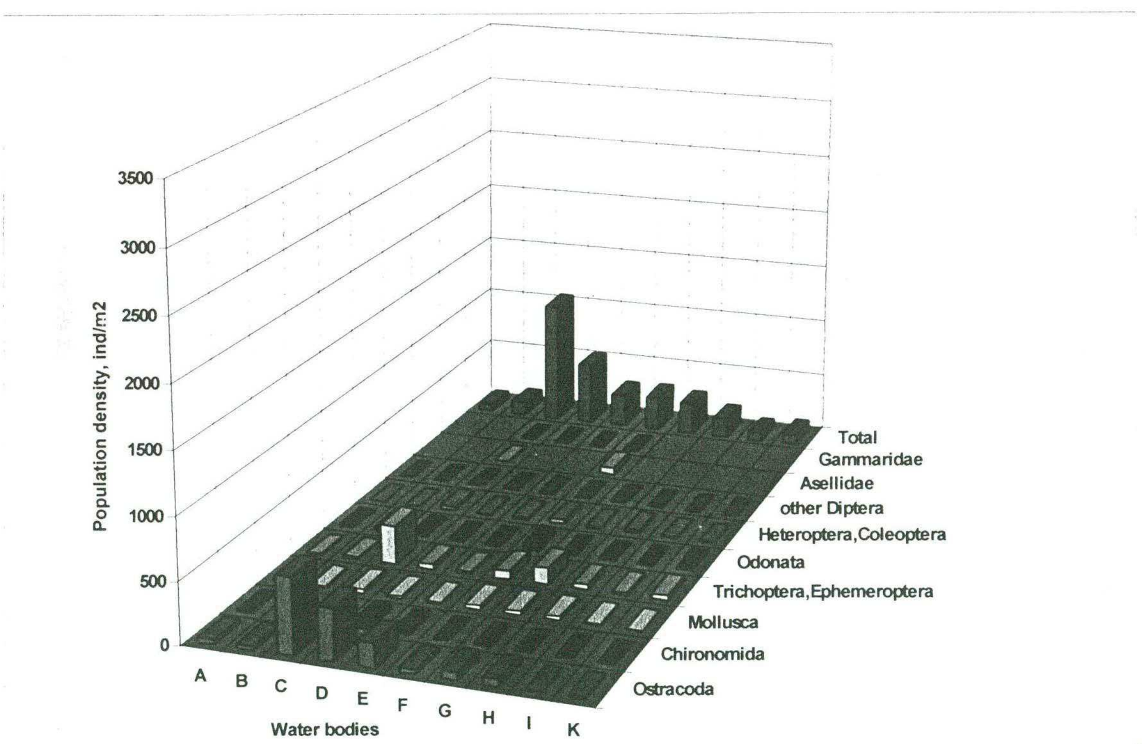


B

Figure 44. Species number of benthos groups along the water bodies gradient. A - spring; B - summer



A



B

Figure 45. Population density of different benthos groups along water bodies gradient. A-spring; B - summer

5.2. Habitat requirements and lateral zonation (pools gradient)

The population density (abundance) of plankton changed in different water pools in 400 time in spring and more than in 1000 times in summer (Fig 42). These values changed in 10-15 time for benthos. (Fig 44). In summer average abundance of zooplankton increased in 10 time more than in spring, but the same value decrease in 4 times for benthos. It could mean that in spring the destruction processes on ecosystems investigated were prevalent but in summer nutrient in water column gave suitable situation foe algae and plankton production.

All range of habitat requirements of invertebrates should be divided into two main categories: vegetation based and sediment based (The New River..., 1994).

The first category includes emergent, submersed vegetation, moss and algae. These different habitats type support the widest variety of taxa but there is a wide range of values the richest and poorest sites. Emergent vegetation is habitat for many insects (damselfly, dragonfly). Water areas associated with marginal vegetation offer pond like conditions and living space for water beetles and water boatmen. The plant stems themselves support a variety of water snails and caddisfly larvae . Large population of water fleas and Copepoda may develop in these areas. Such habitats are more prevalent at the margins of rivers, in sheltered backwaters, slacks and ponded sections more than in deep localities.

The second one (sediment based habitats) includes gravel, silt, sand, clay, etc. These habitats support much more less taxa (for example Diptera species and beetles, Ostracoda, Oligochaeta and Chironomidae).

Comparison of the habitat requirements of zooplankton species, Ostracoda, Insects as well as other community groups illustrates the importance of lateral habitat diversity in river system. For example, the habitat requirements of fishes vary with age. Fry can tolerate only slow-flowing water, tending to occupy vegetation channel margins and side-channels. Adults prefer deeper areas with faster flows. Every age stages will prey most suitable and available for that biotopes group of hydrobiontes and as result the elimination of some species will be registrated. Many freshwater fishes are unselective, opportunist feeders, and some extent grayling, feed on aquatic invertebrates, particularly crustaceans and insects on/ or near the stream bed . The same situation will be for prey Insecta larvae, Amphibia and other taxa.

River flood plain occupies a certain position along longitudinal gradient of the river system in total. Flood plain are themselves large-scale complex gradient between river- channel and upland within which are mosaic of vegetation types with a variety of lotic and lentic water bodies. The gradient zonation approach should be viewed only as a generalisation, but it gave some useful idea about river /flood plain system work.

Flooding as natural disturbance is necessary element of river system function. Thanks that system changes with nutrients, «clean» one zones and «fertilised» other. The natural disturbance (flooding) sustain a habitat type diversity, spatio-temporal heterogeneity and support high level of biodiversity and species richness.

Transition zones along water bodies gradient regulate fluxes of matter and energy both between adjacent ecosystems (bottom/water column; water/vegetation, etc.) and across the flood plain.

A lot of processes in water give in sum two main direction for matter and energy exchange. There are sedimentation (plankton block) and destruction/resuspension and flux from a bottom (matter transformation and bioturbation by benthos block populations). Benthic macroinvertebrates are important in structure and function of river system because of their role in the food web, productivity and decomposition, nutrient cycling (Zhukova, Nagorskaya, 1994)

The processes in flood plain demonstrated relationship between different local patches across landscape scale. The landscape diversity is one of the reason of biotope diversity in water bodies and these in there term, the species richness/ or biodiversity.

5. 3. Conclusions

705 species were identified in total, (287 were plankton and 418 benthos species). It was found a big percent rare species in the fauna composition. The dominant species complex was selected for future comparative analyses

The population density (abundance) of plankton changed in different water pools in 400 time in spring and more than in 1000 times in summer. These values changed in 10-15 time for benthos. In summer average abundance of zooplankton increased in 10 time more than in spring, but the same value decrease in 4 times for benthos. It could mean that in spring the destruction processes on ecosystems investigated were prevalent but in summer nutrient in water column gave suitable situation foe algae and plankton production.

The investigation of biota in flood plain water bodies gradient gives a broad perspective to use macrofauna for water quality assessment and a framework for more effective management of river ecosystems. To provide reliable information on species richness is a major information block challenge which must be met in order to assess priorities in conservation biology.

6. General conclusion

1. Hydrological and ecological links between river bed and flood plain different type water bodies are the central problem to have a knowledge and a comprehension of the way for river normal life and function.

2. The total area covered with water has been very large in spring 1999 as well as in late summer of 1998. This means that in this area an aquatic ecosystem can have developed during about a year before our sampling period at the end of May.

3. The pojma in May 1999 was very hypertrophic as appears from the thick layers of algae. Most probably the mass decaying of grasses in the flooded area has contributed as much or more to the trophic status of the oxbow lakes than external pollution of the Pripyat. Therefore the situation can change more or less after years with less summer flooding of the pojma than 1996 – 1999. Moreover in years with less high water levels the eutrophication will influence only the oxbow lakes which have more direct contact with the river. More inland the flooding seem to stimulate the decay of plant material less strongly. The influence of ground and rain water can be studied only in years with less high water levels. Even than it can be that their influence on oxbow lakes in the pojma is very low, even in the lakes very near to the higher land.

4. Most probably the differences between wet and dry years will enlarge or reduce the available habitat for many species of the oxbow lakes. Without doubt this will lead to great fluctuation in their numbers.

5.Hydrochemical data and both species number and abundance of taxa demonstrated existence some water bodies with distinct influence by underground waters The preliminary analyses of data let to present some groups in accordance with their habitat requirements and ecological preferences along water bodies gradient from oxbows situated near river bed and influenced by river regularly to inland water bodies with soft water.

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7. Recommendations for further investigations

1) How the results could be used?

To estimate in detail the fauna diversity or most dramatic change in their distribution in flooding area it is important to carry out the specific investigation in this aspect. In this case the species richness should be described through the numerous localities distinguished in habitat quality along the river.

Nevertheless, it should be necessary to choose for investigation in monitoring manner (at least one time per month) a few number series of water bodies which environmental quality in remarkable level were provided to exchanging of allochthonic matter from the river flood plain.

The community succession in these few pools during all vegetation season should give more clear idea about both the species richness dynamic and their correlation with environmental parameters.

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The data obtained could be used as referenced ones to estimate physic-chemical parameters (for example, with Mann-Whitney U Test) and for biotic parameters which are used successful in many countries. In UK (BMWP) Biological Monitoring Working Party score system works and used of invertebrates data for water quality indication (The New River..., 1994).

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The lack of some of some taxa in unsuitable for their life cycles season could be reason for conclusion about pollution because they have high indicator values for some indexes. For that aim it is necessary to have information about normal succession in the pool and life cycles of species from the community.

It seems to be lack the universal index for all type of water ecosystem (or even for one type of ecosystem.). Nevertheless, for concrete ecosystem investigated the significant correlation between species richness and environmental features for the site provide some general indicators (Wright et al., 1998)

8. Summary

The macrofauna of **12 water bodies** in Pripyat river flood plain in gradient from oxbows by river to inner pools was investigated in two seasons (spring and summer) in 1999.

The pool gradient approach was evaluated on the relation between various water fed souses (flooding/ precipitation/ underground waters). Extraordinary flooding 1998-99 was a reason of **untypical situation on pojma** and completely different situation in pools in two periods of sampling. The influence of underground water was not very big and flooding and precipitation were prevalent, especially in spring. The area sampled at each of water bodies was very localized but the range of taxa considered was very wide.

705 species were identified in total, (**287** were plankton and **418** benthos species) and a list is open for various taxa not identified yet. It was found a big number **rare** species in the fauna composition.

The population density (abundance) of plankton changed in different water pools in 400 time in spring and more than in 1000 times in summer. These values changed in 10-15 time for benthos. In summer average abundance of zooplankton increased in 10 time more than in spring, but the same value decrease in 4 times for benthos. It could mean that in spring the destruction processes on ecosystems investigated were prevalent but in summer nutrient in water column gave suitable situation foe algae and plankton production.

The dominant species complexes were selected for future comparative analyses. The environment gradient between adjacent river ecosystem provide wide range landscape, biotope and biodiversity and are the necessary natural component of the river catchment.

Hydrochemical data and both species number and abundance of taxa demonstrated existence some water bodies with distinct influence by underground waters The preliminary analyses of data let to present some groups in accordance with their habitat requirements and ecological preferences along water bodies gradient from oxbows situated near river bed and influenced by river regularly to inland water bodies with soft water.

Hydrochemy of water bodies investigated was studied in respect of following parameters: temperature, oxygen, pH, conductivity and hardness both total and carbonate alkalinity, nutrients (PO_4^{3-}, NO_2^-, NO_3^-), and ammonium (NH_4^+).

Pripyat flood plain waters is characterized by a big amount of organic (humic) matter as well as Fe content from bogs of the river catchment especially after a flooding. The typical feature of waters from the middle part of Pripiyat catchment as well as river itself is a deficit of oxygen saturation (40-85%).

The **decreasing** of pH, conductivity and hardness both total and carbonate were mentioned **along water bodies gradient from river to inner water bodies**. There were a few **exceptions** from that tendency for a few pools , which were differed by the increasing of these parameters. It seems to be the **underground / run-off waters contribution** in water souses feeding at these points.

pH of water bodies investigated let to characterize them as mild alkaline (6,5-7,5 in spring and 6,2—8,5 in summer) and only bog pools are really acidic waters.

Pripiyat lowland waters are mild mineralised. They belonged to hydrocarbonate-calcium II type. Conductivity of water bodies investigated decreased from oxbows by riber to inner pools varied in 1,6 time in spring (400-250 uS/cm) and in 10 times in summer (460-54 uS/cm). These value lied in the middle part of the scale for fresh waters.

The **alcalinity** decreased from oxbows by riber to inner pools within 2,0-3,0 (2,55-3,4 for stations **C2, F2, H**) in spring and 2,0-3,3 (4,6-3,3 for ones) in summer. These increasings probably were provided for run-off waters in the pool patches. In tolat alcalinity was not changed in a great measure from 60th years.

The **carbonate hardnessas** decreased along the water bobies gradient mentioned above from 12 to 4 °dH in spring and from 10 to 2 °dH in summer, in the same time localities **B** and **C** had values 11-13°dH.

The **total hardness** demonstrated distinct decrease trend from a river to inner pools - bog, changing from 13-15 to 4 ° dH in spring and from 11-18 to 3 ° dH in summer. An excess of values demonstrated again the localities **C1, F2** and **H**. So,oxbows by rivers bed as well as pools with undergraundwater feeding should be characterised as «medium hard», (in spring especially), while inner pools are «soft» (and even «very soft» for pool **K, L** and **M).**

The **nutrients amount** of water bodies investigated confirmed their euthrofic type. Orthophosphates were characterised by considerable high euthrophic value in oxbows situated by a main river channel **(A □ D)** and regularly flooded by river waters, especially in spring after flooding (>0,43 - 1,0 mg P/l), while in summer these value dropped down to 0,15-0,25 mgP/l. The inner pools had 0,05-0,25 mg P/l. Phosporus loading of a system enhanced more than 5 time since 60th years, as result of a meliorative activity in up-river tributaries of Pripyat.

Nitrite and nitrate ions content was high for the points **(E** and **F)** which were situated in the area with visible anthropogenic impact (water bodies **B, C, E, F** were used as watering-places by herds from villages, and pool **E** was situated by the ploughed fertilised field).

Ammonium was **missing totally** in all water bodies investigates both in spring and in summer.

The line pools **(C, F, H)** which had the anthropogenic alteration in the past showed the values which are close to oxbows by the Pripyat river. It seems to be a reason in the increase of underground water feeding.

A **zooplankton** of studied water bodies was characterised by a high number of species. A total number of species and specific forms of planktonic organisms found us in all research period was **267**, among them **204** species of rotifers, the **25** of copepods, and the **38** of Cladocera.

In a list of planktonic invertebrates 38 species are**new** in the fauna of Belarus.

The 84 species of rotifers, the 14 of copepods and the 15 of Cladocera are registered firstly in the water fauna of the National Park "Pripyatsky".

In a gradient of investigated water-bodies a species number and a density of planktonic invertebrates increased regularly along with a distance from the main river –bed in spring. In summer these fluctuations were irregular.

Average density values of zooplankton populations were in 10 times higher in summer than in spring. In spring samples rotifers and Cladocera dominated in a number and in summer rotifers and different developmental stages of cyclops were more numerous.

It was revealed **43 species of Mollusca (29 Gastropoda** and **14 Bivalvia)** during both spring and summer field works season. In spring we found the almost the same species number as in summer: **33** and **37** species respectively. The species list of mollusks according to quantitative samplings consists of near 84% from that of qualitative once. It is concluded that the method of quantitative sampling is capable of producing inestimation species richness and population density values of mollusk inhabiting water bodies in reality without taking into consideration the environmental Mollusca preferences.

The greatest species diversity was mentioned **in spring** in water bodies **G** and **H**. It was the sampling sites where the most favourable conditions for mollusks were provided due to high quality physico-chemical factors which are responsible for species diversity, rich macrophytes development and a high level of photosynthetic activity.

In summer the highest number of species were found in the locality **A, B, C**. These biotopes (sites **A, B, C**) were situated a very close to the river and as a result mollusks may colonize these habitats by passive dispersal effected by a number of factors. The advantageuous life conditions in this habitats be related with combination high quality of habitats and hydrochemical propeties suitable for mollusks. In summer in the sites from **E** to **K** the probably influence of the considerable decreasing water area or even drying up were the determining factor for maiacofauna of these water bodies. In the context of these comments in pools F, K were recorded the relatively low alkalinity, pH, hardness.

The effect of season sampling on mollusk species number has been studied. The variable domination of mollusks species is appeared one of the characteristic features of sampling seasons. In spring 12 species have been found in more than 5 sampling sites of which only 4 (*Lymnaea stagnalis, Planorbarius corneum, Viviparus contectus* and *Bithynia tentaculata)* occurred in 50% of our sampling habitats in summer.

The mollusk species assemblages demonstrated the increasing of stagnant mollusks species and lacking of reophilic ounces in spring. In summer samplings the bivalve mollusks (f.Pisidiidae) increased in number species as well as some other reophilic species (in the sampling sites **A, B, C**).

The share of occurrence in the pools branchiate and pulmonate species differ in spring and summer samplings season. The tendency for decreasing the share of occurrence branchiate species was appeared more noticeable in summer season and probably reflects the real situation repeated every year for water bodies in floodplain of the river.

In the water bodies of the Pripyat flood plain **42 Ostracoda** species were identified. That testify the plenty rich Ostracoda fauna composition. Moreover, *Lepidurus apus* (**Notostraca**), *Gammarus lacustris* and *Synurella ambulans* (**Gammaridae**), *Lynceus brachiurus* (**Laevicaudata**) -as well as numerous *Asellus aquaticus* (**Asellidae**) inhabited the oxbows investigated.

So **in total there are 49 species of Crustacea** (without plankton).

The total species number per pool increased along water bodies gradient **A ✹ K** in spring after flooding. In summer the trend to decrease of species number per pool from river bed to swampy areas was fixed distinctly. In the same time there are the tendency to increasing of species number with diversity of biotopes per pool.

The population density of Ostracoda assemblages increased from the pools situated near the river bed to more isolated ones in spring. Its maxim meaning was in the big and diverse oxbows **F, G** and **H**. In summer it was back directed trend. The maximal population density of Ostracoda were fixed in oxbows by the Pripyat bed.

4 species of Ostracoda which are **the component of river fauna** were found in the oxbows which have periodically / constant contacts with the Pripyat.

12 species **(31%)** Ostracoda from water bodies investigated are **rare** for Belarus as well as for some European countries.

The analyses of a relative abundance and ecological peculiarities demonstrated distinct **ecological groups** which inhabited different water bodied in gradient. They are ubiquists, river complexes species and species were attracted by soft more inland water bodies.

The typical **river Nematocera** species as found in the main channel of the Pripyat (AquaSense, 1999) are nearly totally **lacking in our samples**.

The water in nearly all localities at the northern side of the dike and also in the water bodies **F** and **G** directly along the dike at the southside was in spring and summer **very eutrophic**. The more inland lying water bodies **H,I** and **K** show more advanced succession and are smaller, but appear to be also a little more mesotrophic. However they have still no true mesotrophic community. Also in these systems decaying of organic material is at least as important as production.

The (last year often and prolonged) flooded pojma is inhabited by species hardly living in the river, but rather common in the oxbow-lakes. Interchange between these systems can play a special role in this year.

The origin of the water seems to play hardly a role in the investigated water bodies: river and deep ground water had nearly the same composition (apart from phosphate); only pool **K** had more or less soft water, but no characteristic chironomid fauna.

Influence of the river seemed to be important in this sense that it caused higher trophy (through decaying material from pojma), sandy instead of organic silt bottom and other vegetation.

Within one water body more or less ground or rain water can cause locally great differences in chironomid fauna. There are great differences between the fauna of spring and summer. Probably more predation in summer and more decaying plant material in spring are the main causes.

Taking into account that true river habitats and true mesotrophic water bodies were not included in the investigations the total diversity of the area is high.

Dragonfly species were unevenly distributed along the studied gradient from river to bog. Eleven species were found in (almost) all sampled habitats. Seven species were insufficiently sampled to draw any conclusions.

The remainder (nineteen species) could be attributed to **four ecological groups**: river species, flood plain species, bog species (some occurring in the adjacent lagg-zone) and transition species. The last category includes species occuring in the lagg-zone and the adjacent part of the flood plain. This part of the gradient is richest both in species and individual numbers. The four species restricted to this transitional zone are all particularly critical in respect to the vegetation structure of their habitat. The six species typical of the flood plain appear to be restricted to this zone because of the absence of large, eutrophic or open water bodies elsewhere in the gradient.

The **105** species of water beetles and bugs were found. For the most part they were **Coleoptera** - **82** species: *Haliplidae* - 7, *Noteridae* - 2, *Dytiscidae* - 45, *Gyrinidae* - 2, *Hydrophilidae* - 20, *Hydraenidae* - 4 and *Dryopoidae* - 2. The water bugs (**Heteroptera**) were represented by **23** species: *Corixidae* - 9, *Notonectidae* - 2, *Pleidae* - 1, *Naucoridae* - 1, *Nepidae* - 2, *Gerridae* - 5, *Hydrometridae* - 1, *Mesoveliidae* - 1, *Veliidae* - 1.

The tendency of decreasing of the relative number of reophilic species *Haliplus fluviatilis (Haliplidae), Hygrotus versicolor (Dytiscidae)*and *Gerris paludum (Gerridae)* is shown in gradient of investigated pools from**A** to **K**.

The species of water beetles: *Haliplus fulvicollis*, *Haliplus furcatus*, *Hydroporus tristis, H. erythrocephalus, Graptodytes granularis*, *G. bilineatus*, *Acilius canaliculatus, Enochrus coarctatus*, *Hydrochus brevis* and bugs: *Notonecta lutea* and *Gerris odontogaster* typical for peat-bog were found mainly in the localities**H** and **Ê**.

Hydraenidae - Ochthebius minimus, *Limnebius truncatulus* and *Limnebius atomus* were found in **H1**) and **F4**. Moreover these species are common in spring ecosystems of Belarus. It may be connected with the certain influence of ground water in this localities.

The wide variety of favourable habitats in investigated floodplains result in occurrence of a rich fauna of water beetles and bugs. Enough **rare** species in the fauna of Belarus were found among them such as *Hygrotus quinquelineatus*, *Hydrochus ignicollis Motschylsky, Cymatia bonsdorfii*. *Graphoderes bilineatus* and *Notonecta lutea* are under protection in some european contries (Red List).

It is assumed that the old bed **"F"** is intermediate among studied water-bodies in sense of ecological conditions (an influence of the Priryat River).

In summer a number of big predator water beetle and bug species belonging to genera *Dytiscus, Cybister, Acilius, Graphoderes, Hydaticus, Ilybius, Colymbetes, Rhantus, Notonecta, Ilyocoris* increases – 686 specimens (29,0% from Coleoptera, Heteroptera) if compare to spring – 60 specimens only (7,1%).

Oxbows are important **system-forming elements** of a whole natural complex in a range: a river (Pripyat, Neman) – meliorate channels – big stagnant waters (old river beds, flood plain lakes) – small stagnant waters (ponds, temporal pools) – bogs and etc. In them a main body of a water beetle fauna is concentrated.

The number of **Syrphidae** species associated with aquatic habitats increases with decreasing influence of the river. Most of the species associated with aquatic habitats found in or near the flood plains are eurytopic and common. A relatively large part of the species associated with aquatic habitats found out of the flood plains is confined to particular habitats and less common

The data do not reveal a relation between the number of predacious species and the influence of the river.

Species-richness of species associated with dead wood seems to increase with decreasing influence of the river.

The number of eurytopic species is constant with changing influence of the river, while the number of critical species seems to be twice as high on sites out of the flood plains. Possible explanations for the larger number of critical species on sites out of the flood plain might - for instance - be found in the lower extent of hydro- and morphodynamics (higher stability), the less eutrophic character of the water, etc. The larvae or pupae of many Syrphid-species hibernate in soil or litter. Probably :hey are not capable of surviving long periods of flooding.

The Pripyat-plains and their surroundings form a very interesting habitat for Syrphid-flies. Some of the species found, are considered to be **rare and threatened** on a European level . Examples of these species are *Anasimyia lunulata, Mallota tricolor, M. megilliiformis* and *Eristalis cryptarum*. (Some of these species were only recordes on sites not included in the research-project for RIZA.)

A very intersting and valuable type of habitat is **the hardwood alluvial forest**, as visited near Hlupin **(D).** This habitat has rapidly disappeared from large parts of Europe during the 20th century, which may explain the **rarity** of some of the species occurring here (i.e. *Mallota tricolor*).

General conclusion

1. Hydrological and ecological links between river bed and flood plain different type water bodies are the central problem to have a knowledge and a comprehension of the way for river normal life and function.

2. The total area covered with water has been very large in spring 1999 as well as in late summer of 1998. This means that in this area an aquatic ecosystem can have developed during about a year before our sampling period at the end of May.

3. The pojma in May 1999 was very hypertrophic as appears from the thick layers of algae. Most probably the mass decaying of grasses in the flooded area has contributed as much or more to the trophic status of the oxbow lakes than external pollution of the Pripyat. Therefore the situation can change more or less after years with less summer flooding of the pojma than 1996 – 1999. Moreover in years with less high water levels the eutrophication will influence only the oxbow lakes which have more direct contact with the river. More inland the flooding seem to stimulate the decay of plant material less strongly. The influence of ground and rain water can be studied only in years with less high water levels. Even than it can be that their influence on oxbow lakes in the pojma is very low, even in the lakes very near to the higher land.

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Appendix 1. Zooplankton population density (N, ind/m3) : Rotifera, Copepoda, Cladocera

Spring:

Species	A1	A2	A3	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	F3	F4	G1	G2	G3	H1	H2	H3	I	K1	K2	K3
Anueropsis fissa fissa										50000	35000					2000	x					36000			2500
Ascomorpha ecaudis															x	x	800		x						x
Ascomorpha minima																									
Ascomorpha ovalis																								9000	
Ascomorpha saltans																						90000			x
Asplanchna herricki															700	50									
Asplanchna priodonta helvetica																2000	140	40							
Asplanchna priodonta priodonta				50					200													2000			
Asplanchnella sieboldi														x										50	
Bdelloida sp.		1800		x		20	60		400	2500	50	700				150	800	x	20000	x		120	x	1500	2500
Brachionus bidentata bidentata									40																
Brachionus calyciflorus calyciflorus									200																
Brachionus quadridentatus melheni				50					200																x
Brachionus quadridentatus quadridentatus																				x			x	x	
Cephalodella gibba gibba				50															10000	7500					
Cephalodella sp.																									
Cephalodella sp.sp.				x																		40			
Cephalodella ventripes ventripes																			25000	2500					
Colurella aqueducta colurus																						2000		x	
Colurella unsinata unsinata														200	7000		x		50000	32500			2500	1500	
Conochilus hippocrepis												11200	X			62000	37600	9600	10000	412500			2500	x	x
Dicranophoroides caudatus																							x		
Dicranophorus forsipatus																									
Drilochaga delagei									20																
Encentrum putorius putorius																				x					
Enteroplea lacustris																							x		
Euchlanis contorta	1400	240																		5000		40			
Euchlanis deflexa deflexa							20							20	20	50	40					400			
Euchlanis dilatata dilatata				x		200	100												5000					1500	

Euchlanis dilatata lucksiana				500				50	x																x
Euchlanis dilatata unisetata		480								20	50									2500		2000		3000	
Euchlanis incisa																			15000	102500					
Euchlanis lyra larga																								1500	
Euchlanis meneta	100	20		500										20											
Euchlanis sp.							20																		
Euchlanis sp.sp.																									
Euchlanis triquetra																2000			25000	x			x	4500	
Eudactylota eudactylota																			x			20	x	1500	
Itura aurita aurita				x																					
Itura aurita intermedia																									
Kellicottia longispina													X												
Keratella cochlearis cochlearis											300														
Keratella cochlearis robusta									200	50	150					2000	800					8000			50
Keratella cochlearis tecta									400																
Keratella irregularis irregularis									200																
Keratella irregularis wartmanni				50											700										
Keratella quadrata quadrata							x				2500		X			24000	7200	100				4000			
Keratella ticinensis				500						150													12500	42000	5000
Keratella valga brehmi																	800								
Keratella valga valga										150	100					2000	4800	1600							x
Lecane arcuata				500					200	100						2000			30000	10000					
Lecane bulla bulla							20												10000	x		4000	x		x
Lecane bulla goniata																								x	
Lecane closterocerca				x					x	1000									50000			2000	x		
Lecane copeis																								1500	
Lecane curvicornis																							x		
Lecane desipiens																			5000						
Lecane hamata																			10000						2500
Lecane ludwigii ludwigii																						40			
Lecane ludwigii ohioensis																									
Lecane luna balatonica																							x		

Lecane luna luna											1400			20	100	20		10000	2500		2000		1500	
Lecane luna presumpta (papuana?)																			2500		2000	x		
Lecane lunaris lunaris	20			x												800		20000	2500		2000	x	1500	2500
Lecane lunaris crenata																							x	
Lecane quadridentata																					40	x		x
Lecane sp.									20														x	
Lecane sp.sp.																								
Lecane stichaea metoria									200										x		2000		1500	
Lecane tenuiseta tenuiseta																		5000						
Lecane ungulata																		x						
Lepadella acuminata acuminata										500								10000	5000		16000		1500	
Lepadella ovalis	80			1500			20			50						20		10000	25000		2000			
Lepadella patella patella				x				50		x	200							75000	15000		36000	2500	x	
Lepadella rhombopides rhomboides																						2500	1500	x
Lophocharis salpina																			x					
Microcodides chlaena																							1500	
Monommata actices																			x					
Monommata aeschyna																			20000					
Monommata enedra																		5000	x					
Mytilina crassipes													20	x										
Mytilina mucronata spinigera				50		200	20					X			2000	800	100	30000	10000		2000	5000	3000	
Mytilina ventralis brevispina																					x			
Mytilina ventralis redunca																		x						
Mytilina ventralis ventralis										100					100			30000	7500		x		1500	
Notholca acuminata acuminata				50																				
Notholca acuminata externa	40																							
Notommata copeus																		x			40			50
Notommata pachyura																			2500		400		1500	
Notommata sp.									20															
Notommata tripus																		x						
Paratrichocerca cylindrica																		5000					x	
Platyias patulus patulus																							1500	

Platyias quadricornis quadricornis														1200	1400	2000	40		x						
Polyarthra dolichoptera				1500				300	3000	2750 00	6800 0		2100			1360 0	2952 0	1600	3000 0	1250 00		8000	3575 00	2730 00	1025 00
Polyarthra mayor		600								1175 00						1360 0		3200						1050 00	5750 0
Polyarthra remata											1020 00											2000			
Polyarthra vulgaris											7500					2448 00	2656 80	1128 00							
Pompholyx complanata											50	X			1400										
Postclausa minor																									
Proales decipiens														200						2500					
Proales sigmoidea		20		x				50				X	X												
Squatinella rostrum rostrum																				7500					
Squatinella similis																			4000 0	6750 0					
Squatinella tridentata																			1000 0			400			
Stephanocerus fimbriatus														200									x		
Synchaeta kitina								1670						x	2800										
Synchaeta pectinata				500			20		400		100	X	700	400	4200		4464 0	1600 0					x	4500	x
Synchaeta tremula	1400			x					3000	5000	500	X	700				4960	800	5000	2750 0		400			
Testudinella caeca		600																							
Testudinella emarginula																								x	
Testudinella parva																						40			
Testudinella patina mucronata				50										20											
Testudinella patina patina	60	240		50		200	20		200	100		X	200		80	2000	800	80	x			2000	x		
Testudinella patina trilobata						400	0																		
Testudinella sp.				500			200																		
Testudinella truncata ecornis																			5000						
Testudinella truncata truncata		600													20										
Trichocerca bicristata														400										1500	
Trichocerca capucina													X												
Trichocerca dixon-nutalli																		260							
Trichocerca elongata																			1000 0	x					
Trichocerca iernis																						4000	x		
Trichocerca insignis																							x	x	
Trichocerca longiseta																						4000	x		x

Trichocerca porsellus				x												500			10000	15000		2000			
Trichocerca pusilla								50	200	100			X												
Trichocerca rattus carinata	3500	480		x			400		400										10000	2500		40	7500		x
Trichocerca rattus minor										50									20000	30000		20000			
Trichocerca rattus rattus								1670							x					5000					
Trichocerca similis																				7500					
Trichocerca sulcata																				5000					
Trichocerca tenuior				x												500		800							
Trichotria posillum bergi														200					65000						
Trichotria posillum posillum														x		100	800	800		47500					
Trichotria truncata truncata	700											X				200	800	40				2000		x	
Rorifera SUM:	7300	5080		6400		1020	900	3840	9500	452370	216500	13300	3700	2880	18340	4E+05	401860	147820	670000	1010000		260020	392500	468050	175100
COPEPODA																									
Attheyella(Brehmiella) northumbrica								150																	
Attheyella(Brehmiella) trispinosa																						20			
Cryptocyclops bicolor bicolor														80	1400				x	x					
Cyclops copepodit	16100	240		x		40	40	300	200	42500	15000	3500	1200	2600	19600	16000	4800	9600	35000	55000		34000	52500	37500	17500
Cyclops nauplii	2800	8400		1000		600	400	1670	1200	50000	2500	25900	4200			308000	150400	298400	150000	450000		92000	150000	252000	105000
Cyclops sp.				50																				1500	
Diacyclops bicuspidatus												20													
Diaptomus copepodit															1400		60					400	x		37500
Diaptomus nauplii												700	20			4000	4000					x	x		37500
Epactophanes richardi																								50	
Eucyclops denticulatus										150									5000	x		160	2500	x	100
Eucyclops macruroides												20													
Eucyclops macrurus											50														
Eucyclops serrulatus	1400	1200				60	40	300		50		780	40					100				80			
Eudiaptomus vulgaris																			50			300	x	50	7500
Eurytemora nauplii										x															
Eurytemora velox										50						50		20							

Harpacticoidae copepodit							20		20													4000			
Harpacticoidae nauplii	1400	240		x		400	200		400		50		X		40	250	x	800				4000			
Macrocyclops albidus	40	60										X				50		200							
Macrocyclops fuscus								50												x					
Megacyclops gigas								50																	
Megacyclops viridis	40									x		740			20		40	60	1000 0	7500		40	100		
Mesocyclops leuckarti	80									100	150	700				100	20	240	2500 0	x		520	100	x	x
Metacyclops gracilis																								x	
Metacyclops planus																							50		2500
Microcyclops sp.										50								20							
Thermocyclops crassus (hyalinus)												X	40												
Thermocyclops dubovski												0	0										2500	x	
Copepoda SUM:	21860	10140		1050		1100	700	2520	1820	92900	17750	32360	5500	2680	22460	22460	22460	22460	22460	22460	22460	22460	22460	22460	22460
CLADOCERA																									
Acantholeberis curvirostris		60													60								2500		
Acroperus harpae	700	20				140		50					200			2000				5000		80	1000 0	1050 0	2500
Alona costata										50								20	x			20	x		50
Alona guttata				550			20															400	x	x	
Alona rectangula							40		20									20	1000 0	2500			2500	1200 0	
Alonella exigua												20	400						x			2000	5000	6000	x
Alonella sp.											50														
Biapertura affinis	700					20		100	20													20			
Bosmina longirostris				150												100	800								
Camptocercus rectirostris	80	20								50		20													
Ceriodaphnia megops																			3500 0	x				1500	
Ceriodaphnia pulchella		120						100		1250 0															
Ceriodaphnia reticulata												X	700			300	100	6400	5500 0	2500					
Ceriodaphnia sp.(affinis)							20		2000			7700		40	1400								x	x	
Chydorus sphaericus	2800	240		2500		1000	200	250		500	1150	1540 0	1400		2100	1000 0	240	1280 0	1150 00	1150 00		6000	5000 0	1260 00	x
Daphnia longispina		600										5600	400			1080 00	1600	1000 00					7500	3000	1000 0
Diaphanosoma brachiurum																						120		x	

Disparalona rostrata														20	2800								x	x	
Eurycercus lamellatus	2800	600		5500		200		200				6300	700			300	120	800	x	x		20			
Graptoleberis testudinaria	20	120															x		x			80	x	x	
Leydigia leydigii						20																			
Macrotrix hirsuiticornis																							5000	1500 0	50
Picripleuroxus laevis																				x					
Picripleuroxus striatus										50	50														
Pleuroxus aduncus	700	60				40		100								200	80	340	x					x	
Pleuroxus trigonellus				100		20	20	50				70	40												
Pleuroxus truncatus		120		50		200		100		500	50	20	700			50				x		2000		1500	
Polyphemus pediculus	1400	6000											40					20					x		
Scapholeberis mucronata	700	40				x						40	20										2500		5000
Sida crystallina		120		2500		20		100	20		50		40	40	5600										
Simocephalus vetulus	4200	1140 0		3500		1200		9185	1410 0	1000	350	1680 0	1600						5000 0	4250 0		120	x	3000	x
Cladocera SUM:	14100	19520		14850		2860	300	10235	16160	14650	1700	51970	51970	100	11960	1E+05	2940	12040 0	26500 0	16750 0		10860	85000	17850 0	17600

Zooplankton population density (Rotifera, Copepoda, Cladocera)
summer

NN of biotopes	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2	I	K1	K3
Anueropsis fissa fissa	75000	15000	12000		150000	285000	5000				30000	32000	26000	34800000	1495000		500	1000	639000
Ascomorpha ecaudis						50000					10000		4000	100		2000			
Ascomorpha saltans	750000		2000				1000								115000		1000		
Asplanchna priodonta helvetica			48000	68000															
Asplanchna priodonta priodonta	300000	10000										8000							
Asplanchna sieboldi																1000			
Bdelloida sp.	500	15000	4000	8000		55000	2000		10000			12000	16000	250	115000	20000	1500	10000	9000
Brachionus angularis angularis			36000	68000															
Brachionus angularis bidens	150000	1000																	
Brachionus bennini		1000																	
Brachionus budapestinensis budapestinensis	2500	3000		500															
Brachionus calyciflorus calyciflorus	5000	2000	100	12000															
Brachionus calyciflorus dorsas	1000	1000																	
Brachionus calyciflorus spinosus	25000																		
Brachionus diversicornis diversicornis	10000	15000																	
Brachionus quadridentatus ancylognathus						150													
Brachionus quadridentatus brevispinus						15000													
Brachionus quadridentatus clumorbicularis		1000																	
Brachionus quadridentatus melheni													2000					5000	
Brachionus quadridentatus quadridentatus	500	5000				200												5000	4500
Cephalodella cyclops													500						
Cephalodella delicata eudelicata		2000																	
Cephalodella fluviatilis	25000	10000																	
Cephalodella forficula						15000	50												
Cephalodella gibba gibba	500	1000					100		10000				2000			15000		10000	1000
Cephalodella gracilis gracilis															11500		500		
Cephalodella megalocephala																2500			
Cephalodella sp.			500																
Cephalodella sterea													2000	50					
Cephalodella ventripes ventripes		3000															1000		
Cephalodella zeteta											10000								

Collotheca sp.	75000	20000	1000	8000												50	1000	150
Collotheca atrochoides															100			
Colurella colurum		1000													3000			
Colurella unsinata unsinata					5000	40000	2000		80000		5000	4000	20000		69000	25000		2000	350
Conochiloides coenobasis		12000	28000																
Conochiloides dossuarius		1000														100			
Conochiloides sp.																	150		
Conochilus hippocrepis						15000													
Dicranophoroides caudatus						350										1000		200	
Dicranophorus forsipatus					500	0										5000			
Dicranophorus sp.						5000	50								5750				
Encentrum diglandula			500																
Eothinia elongata elongata															5750				
Erignatha clastopis																			4500
Euchlanis contorta					500	0					100	100	150			1000			
Euchlanis deflexa deflexa		50				1000					1000	100	500			150			
Euchlanis dilatata dilatata		5000	100			50			30000							15000			
Euchlanis dilatata lucksiana		5000	500																
Euchlanis dilatata macrura															5750				
Euchlanis dilatata unisetata						100			10000					100				5000	350
Euchlanis incisa																		1000	
Euchlanis meneta			100													200			
Euchlanis triquetra															17250	1000			
Eudactylota sp.															86250	1000			
Filinia brachiata							1000				100								
Filinia longiseta limnetica	60000	10000																	
Filinia longiseta longiseta	65000	15000	256000	688000	5000		100												
Filinia terminalis											20000								
Harringia eupoda																2000			
Hexarthra mira			28000	16000															
Itura aurita intermedia	5000	2000				5000										20000	100		
Itura myersi																		5000	4500
Keratella cochlearis robusta											5000	6000							
Keratella cochlearis tecta	125000	25000	1220000	3440000			5000				990000	112000	268000						

Keratella irregularis irregularis			144000	252000															
Keratella irregularis wartmanni	50000	25000																	
Keratella ticinensis					2500	15000								228000	115000	15000			4500
Lecane arcuata															17250	85000		5000	
Lecane bulla bulla			500	500	400	20000	100		30000			8000	500	6000	115000	35000		1000	1000
Lecane closterocerca		1000	4000			25000	100		15000				500		28750	35000	50	5000	
Lecane decipiens					500														
Lecane flexilis																			
Lecane hamata		50				40000	100						2000				50	5000	1000
Lecane ludwigii												100				5000		1000	
Lecane luna balatonica															11500	2000			
Lecane luna luna			1000	500					10000							30000			
Lecane luna presumpta																250			
Lecane lunaris		1000	500		500	35000	50		5000			2000		100	5750	5000		1000	
Lecane quadridentata					50	600													
Lecane stichaea metoria							1000								11500				
Lecane furcata															17250	5000		5000	1000
Lecane ungulata													500			300			
Lepadella acuminata acuminata		1000			500	5000									17250	10000		5000	4500
Lepadella ovalis			500						2000					100	5750	750			
Lepadella patella patella					500	20000	1000		30000			4000	2000		115000	25000		5000	1000
Lepadella rhombopides rhomboides															230000	5000			1000
Lindia pallida	25000	10000																1000	
Lindia truncata																	100		
Lophocharis oxysternon																	100		
Lophocharis salpina															17250				
Metadiashisa sp.																100			
Monommata actices					2500	745000					65000					250			
Monommata aeschyna															11500	5000			
Monommata caudatum																		10000	
Monommata enedra			4000																
Mytilina mucronata spinigera						5000			5000			700			28750	500		1000	
Mytilina trigona																500			
Mytilina ventralis redunca						400	50		10000			2000							

Mytilina ventralis ventralis									65000		1000	2000			5750	1250			
Notommata glyphura													500						
Notommata pachyura											100								
Parencentrum plicatum																	1000		
Platyias patulus patulus						5000			200						11500	30000			
Platyias quadricornis quadricornis			500						150							600			
Pleurothrocha robusta									5000					50		10000			
Polyarthra dolichoptera	1000000	435000	212000	184000	47500	20000	61000		10000		20000	464000	10000	552000	2000000	75000	4000	5000	288000
Polyarthra euryptera			1000	500															
Polyarthra longiremis			8000	16000									80000	198000	300000	5000			
Polyarthra remata					25000	5000					955000	48000							
Polyarthra vulgaris	100000	5000							155000		0	108000							99000
Pompholyx sulcata	350000	40000	276000	412000							15000	854000							
Postclausa hyptopus	2500	15000			15000		2000				250000	6000							4500
Proales decipiens														100					
Proales sigmoidea									15000			200		500	5750				50
Proales sp.															50				
Proalinopsis sp.															5750				
Resticula melandocus																	50		
Scaridium longicaudum		1000			500	25000	1000		5000										50
Squatinella mutica													50	6000					
Squatinella rostrum rostrum		5000															100		
Squatinella similis															5750			15000	
Squatinella tridentata					2500	20000													
Stephanoceros fimbriatus															150				
Synchaeta kitina		45000																	
Synchaeta longipes		1000		500			6000				230000		58000						
Synchaeta oblonga													4000						
Synchaeta pectinata		5000	24000	56000			2000				75000	30000							4500
Synchaeta stylata				8000															
Synchaeta tremula						5000	150										50		
Taphrocampa selenura		1000				50			250										
Testudinella emarginula											1000		2000					1000	
Testudinella patina mucronata											100								

Testudinella patina patina															17250	250		1000	
Testudinella truncata truncata																		5000	
Trichocerca bicristata																500		5000	
Trichocerca bidens																		150	
Trichocerca capucina	10000	50	16000	12000															
Trichocerca cylindrica	175000	10000																	
Trichocerca dixon-nutalli					500														
Trichocerca iernis						5000					1000								100
Trichocerca inermis			4000	4000			1000					100							
Trichocerca intermedia																		100	
Trichocerca musculus													500						
Trichocerca parvula															5750				
Trichocerca porsellus			100				50									5000			
Trichocerca pusilla	150000	25000	4000	8000		1000							100	200					9000
Trichocerca rattus carinata							100		250			100	100						
Trichocerca rattus minor					2500	10000	1000								5750	1000			
Trichocerca rattus rattus							50				1000								
Trichocerca similis	25000	10000	108000	300000	2500	0												5000	
Trichocerca sp.											20000								
Trichocerca tenuior											5000				11500	250			
Trichocerca tigris		10000										2000							
Trichotria posillum bergi																2000			
Trichotria posillum posillum						30000	1000				20000				11500				
Trichotria truncatum truncatum									5000									5000	
Rotifera SUM:	3562500	827150	2444900	5562500	264450	1523900	94050		507850		2730400	1705400	501900	35791550	5060200	510550	10300	132450	1082550
Cryptocyclops bicolor bicolor					100	15000			30000					50					
Cyclops copepodit	37500	2000	3000	24000	32500	245000	2000		1360000		30000	72000	8000	150000	115000	10000	2000	45000	4500
Cyclops nauplii	600000	30000	64000	80000	75000	745000	49000		85000		130000	144000	32000	894000	115000	70000	2500	120000	121500
Diaptomus copepodit																		500	100
Diaptomus nauplii																			4500
Ectocyclops phaleratus														2000	200			250	
Ergasilis sp.	100																		
Eucyclops denticulatus															600	3000		3000	300

Eucyclops macruroides						2000						100							
Eucyclops serrulatus					500	5000			10000			2600	250	1000					
Eudiaptomus vulgaris																		550	250
Eurytemora velox	150																		
Harpacticoidae nauplii				4000	7500	10000	1000		85000			100			5750	1000			
Macrocyclops albidus						1000			100		5050		50	1000	600	150			
Macrocyclops fuscus						100			400					2000					
Megacyclops viridis									200					300	800	700			
Mesocyclops leuckarti			150	250	600	25000			7000		1000	200		4000	1800	1000	200	3000	
Metacyclops gracilis															100	200		150	
Thermocyclops crassus (hyalinus)					500	100			45000			500	150	5000	1400				
Thermocyclops oithonoides	600			750															
Paracyclops affinis																		150	
Copepoda SUM:	638350	32000	67150	109000	116700	1048200	52000		1622700		166050	219500	40450	1059350	241250	86050	4700	172600	131150
Acroperus harpae			1000	50	500	550					5000	2000	1500	6000		50			50
Alona rectangula	500	200	500		2000	25000	150					700	2500			1000			
Alonella exigua												300						2000	
Alonella nana									1000										
Bosmina longirostris	30000	50	4500	28000							2000								
Camptocercus rectirostris						100			50										
Ceriodaphnia megops							100				7000	500		30000			100		
Ceriodaphnia pulchella			1000		1500	900					95000	2000							
Ceriodaphnia quadrangula									65000				50	200					
Ceriodaphnia reticulata									100000				1500	300	600	50			
Ceriodaphnia rotunda														150					
Chydorus sphaericus			4000	2000	5000	3000	4000		10000			8000	4000	18000		3000		150	50
Diaphanosoma brachiurum	10000				1000	100			10000				6000						
Disparalona rostrata		100																	
Graptoleberis testudinaria			500	1000								4000						1000	
Ilyocryptus sordidus						50													
Macrotrix rosea																		1000	
Oxyurella tenuicaudis																		50	
Picrij leuroxus striatus														1000					

Pleuroxus aduncus						5000													
Pleuroxus trigonellus									100										
Pleuroxus truncatus			500	500	500	100	150					2000				150	50	350	
Polyphemus pediculus			50		200	15000			3000			6000							
Scapholeberis mucronata			1500				350		1000		15000	4000						50	1000
Sida crystallina					2500				3000										
Simocephalus espinosus														1000		100			
Simocephalus vetulus					1500	20000			15000		1000	100	1500		400	600			
Cladocera SUM:	40500	350	13550	31550	14700	69800	4750		208150		125000	29600	17050	56650	1000	4950	150	4600	1100

Appendix 2. Population density of Mollusca (N, ind/m2)

spring

Stations	A1	A2	A3	B1	B2	C1	C2	D1	E1	E2	F1	F2	F3	F4	G1	G2	G3	H1	H2	H3	I	K1	K2	K3
Gastropodae																								
Viviparus contectus jj						1,5	4	7,5				1,5									2,5			
Viviparus contectus						2	0,5	1,5	5	1	0,5	1,5	1			2					1,5			
Viviparus viviparus jj	0,5			50	4,5			0,5																
Viviparus viviparus	1,5			5	1,5			1	0,5															
Bithyniidae jj																					0,5			
Bithynia tentaculata		5	2	0,5	0,5											1		1			1,5			
Bithynia leachi																								
Bithynia troscheli			1													2				1				
Valvata macrostoma	2														4,5	16		1		22				
Valvata cristata	0,5			2	3		1,5	1,5	2,5	3					64	390		4		75				
Acroloxus lacustris								0,5																
Lymnaeidae jj		1	1	0,5		0,5					0,5							1		4	2,5		1	1
Lymnaea stagnalis					0,5	1			0,5		0,5	1,5	0,5					1		0,5			1	
Radix auricularia	1	2	1																					
Radix ovata														1										
Stagnicola palustris - complex				1		0,5								0,5			1							
Stagnicola corvus						1								0,5										
Stagnicola palustris			1			0,5	0,5									1	1							
Physidae jj	1,5		1	0,25							4,5				7	14	10	1	2					
Physa fontinalis			1	1					5			0,5			1					8				

Planorbidae jj	**3,5**		**2**			**0,5**					**9**		**1**	**3**	**4,5**	**25**	**25**	**4**		**33**			**3**	**2**
Anisus leucostoma																	**1**							
Anisus vortex							**0,5**	**0,5**				**0,5**			**0,5**			**8**		**1**				
Anisus vorticulus												**0,5**				**1**					**0,5**			
Bathyomphalus contortus jj																				**26**				
Bathyomphalus contortus		**1**						**0,5**				**0,5**				**1**		**8**		**6,5**			**1**	
Gyraulus crista		**1**	**5**																		**0,5**		**1**	
Gyraulus albus																					**2**			
Planorbis planorbis					**0,5**	**2**					**0,5**					**1**	**1**	**1**		**4,5**				
Hippeutis complanatus		**1**	**1**						**0,5**	**2**	**0,5**					**2**	**1**			**0,5**	**2**		**2**	
Segmentina nitida					**0,5**		**0,5**				**0,5**	**0,5**					**1**	**1**		**0,5**			**4**	
Planorbarius corneus jj					**0,5**	**1**		**0,5**	**2,5**	**1**	**5,5**			**1**	**8,5**	**3**	**2**	**1**		**3**			**3**	**2**
Planorbarius corneus						**0,5**		**0,5**		**1**	**1,5**	**1**	**1,5**		**2,5**	**3**	**2**	**9**	**4**	**1**	**0,5**	**1**	**1**	
Sum:	10,5	11	16	60,3	12	11	7,5	15	17	8	24	8	4	6	92	462	45	41	6	186	14	1	17	5
Bivalvia																								
Pisidium milium								**1**										**1**		**15**				
Pisidium obtusale																**1**								
Pisidium pseudosphaerium							**0,5**								**4,5**			**2**		**5,5**				
Sphaerium corneum jj				**2**				**1,5**								**11**				**1**				
Sphaerium corneum	**0,5**				**10**			**1**								**4**								
Sum:	0,5			2	10		0,5	3,5							4,5	16		3		22				

summer

Species	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F4	G1	G2	H1	H2	I	K1	K3
Viviparidae																			
Viviparus contectus jj					**1**	**1**					**1**				**2**				
Viviparus contectus					**8**	**2**			**2**	**3**	**2**		**1**	**1**	**2**		**3,5**	**1**	
Viviparus viviparus jj			**5**																
Viviparus viviparus		**0,5**	**4**	**0,5**															
Bithyniidae jj							**1**												
Bithynia tentaculata		**0,5**		**2**	**3**	**1**	**2**	**3**			**6**				**1**		**0,5**		
Bithynia troscheli																			
Valvatidae,jj			**1**																
Valvata cristata					**3**	**12**								**1**					
Valvata piscinalis	**1,5**				**1**			**6**											
Acroloxidae																			
Acroloxus lacustris				**1**		**2**		**2**	**2**					**1**		**4**			

Succineidae				0,5		4										2			
Lymnaeidae jj					3	9		1	4						2				0,5
Lymnaea stagnalis			1		1			1		2		1	3	3	4	2	4,5		
Radix auricularia		2,5		2															
Radix ovata					3		3	4											
Stagnicola palustris - complex																			
Stagnicola corvus			1																
Physidae jj																			
Physa fontinalis					5	12					3	1	1,5						
Planorbidae jj																			
Anisus (Disculifer),jj															5	2			
Anisus vortex					2	5						3							
Anisus vorticulus															3				
Bathyomphalus contortus					1										1	2			
Gyraulus,jj		2,5		0,5															
Gyraulus albus		2,5			4	1													
Gyraulus riparius					1(?)														
Planorbis,jj															5				
Planorbis planorbis													11,5	1	3				
Hippeutis complanatus													0,5						
Planorbarius corneus jj					2	1							1		1				
Planorbarius corneus					2	2		1		4	25	4	0,5	27	6	6	4	2	
Sum:	1,5	8,5	12	6,5	39	52	6	18	8	9	37	9	19	34	35	18	13	3	0,5
Unionidae,jj		0,5																	
Dreissenidae																			
Dreissena polymorpha		0,5																	
Sphaeriidae																			
Pisidium, jj			2		3	116													
Pisidium nitidum						16													
Pisidium obtusale						1													
Pisidium pseudosphaerium					1	6													
Pisidium henslowanum	2,5		1		1														
Pisidium casertanum	3																		
Pisidium subtrucatum						10		1											
Musculium lacustre							1	1											
Sphaerium corneum jj			1	0,5	6						2								
Sphaerium corneum	2			0,5	1	12					1								

Sum :	7,5	1	4	1	12	161	1	2			3								

Appendix 3. Population density of Ostracoda, Asellidae, Gammaridae, Laevicaudata, (N ind/m2)

spring

Stations	A1	A2	A3	B1	B2	C1	C2	D1	E1	E2	F1	F2	F3	F4	G1	G2	G3	H1	H2	H3	I	K1	K2	K3
Bradleystrandesia reticulata						2,5	1				82	22	0,5			11	3							
Candona acuminata							3																	
Candona candida					0,5	4	11																	
Candona lindneri																								
Candona neglecta					9						0,5	19												
Candonopsis kingsleii								1														3	2	
Candonopsis scourfieldi																		2						
Cyclocypris laevis	1		16			51	15			13		4	41		100	1	12		36	357	3		14	
Cyclocypris ovum				112	9,5			175	130	16						20		19			6	5		
Cyclocypris serena																								
Cypria exculpta								5																
Cypria lata											0,5													
Cypria ophtalmica	2,5			1	3	0,5		22	1,5	12		2,5	7,5		50	3951	15	37	64	202	6,5	3	476	
Cypridopsis elongata											2		3				2							
Cypridopsis newtoni																40								
Cypridopsis obesa	4						1																	
Cypridopsis parva				2	0,5				14	4											1		10	
Cypridopsis vidua	207	2	16	4,5	1,5	13		18	31	14	12	22	6,5	32	800		24			1	1003	3	18	
Cypris pubera	130	10	8	66	18	1,5		2	17	8	66,5	56	0,5	24	116	346	504			2				
Dolerocypris fasciata																				0,5			10	
Eucypris clavata											0,5													
Fabaeroformiscandona fabaeroformis					0,5											51	1					1		
Fabaeroformiscandona fragilis	6			2		4,5	4																44	
Fabaeroformiscandona holzkampfi	1					1,5						0,5	180		200	193	3	1		3			6	
Fabaeroformiscandona protzi						1,5	3																	
Fabaeroformiscandona acuminata						0,5																	2	
Hererocypis (E.) incongruens											0,5													
Ilyocypris decipens	6							2																
Limnocythere inopinata	55																							
Limnocythere relicta																	2							
Metacypris cordata																233								
Notodromas monacha																	14	9	18	3				
Physocypria kraepelini	1																			1				
Pseudocandona compressa	5,5	6			1	6,5	18	5	7,5		1	14	451		500	690	21	5	6	20	0,5		20	
Pseudocandona hartwigi													58					58		25			2	
Pseudocandona insculpta						2,5							82					6		1				

Pseudocandona marchica										2														
Pseudocandona pratensis												6	7											
Pseudocandona rostrata								14		1								17						
Pseudocandona semicognita																60								
Candona jjj	92	5	108	60	148	128	291	28	17	24		19	16					20	8	32	4,5	1	140	2
Pseudocandona jjj	3							5		13			7				9			2	6			
Fabaeroformiscandona jjj				45				22					3					17		16			70	
SUM:	514	23	148	293	191	217	347	299	217	107	166	163	##	56	##	##	610	191	##	##	1031	16	814	2
Species NN	11	3	3	6	9	12	8	9	6	8	9	9	11	2	6	11	11	9	4	11	6	5	11	1
Average sp.NN/pool	**11**			**10**		**14**		**9**	**9**		**15**				**15**			**14**			**6**	**13**		
Asellus aquaticus	470	###	###	39	16,5	165	170	410	56	892	677	518	510	60	177	1017	66	291	2	1,5	30	1	9	
Gammaridae					1,5																			
Gammarus lacustris				11		2	1,5	92			1,5	2												
Lynceus brachiurus																30								
Synurella ambulans																								
*Lepidurus apus**	37							1																
* *(on poima)*																								
Dugesia lugubris		3							1,5	3			0.5			2								
Dendrocoelum lacteum		4			0,5	0.5	1.5	1	1,5	9		0.5				1					0,5			
Mesostoma									0.5															
Rhabdocoela						2			1															
Hydra													1											
Hirudinea																					12,5			

summer

Species	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F4	G1	G2	H1	H2	I	K1	K3
Candona candida	1				20	176	17	65	12	4		1							
Candona lindneri		1,5														4			
Candona neglecta		1	7		8												2,5		
Candona weltneri									78	1									
Cyclocypris laevis						6													
Cypria curvifurcata							1	16											
Cypria exculpta							15	73											
Cypria lata																			
Cypria ophtalmica	2,5	32	3		24	10	40	22		1	22			1		114	12,5		
Cypridopsis obesa		2			20						11								
Cypridopsis vidua		19,5	1	13	20	12	3	6			11	31	123					19	3

Fabaeroformiscandona caudata			44															19	
Fabaeroformiscandona fabaeroformis											2					2			
Fabaeroformiscandona fragilis						54	21	314	216	13									
Fabaeroformiscandona hyalina																			
Fabaeroformiscandona protzi						6													
Fabaeroformiscandona acuminata						8													
Physocypria kraepelini								152		11									
Pseudocandona compressa					8	8					1								
Pseudocandona insculpta						2													
Candona jjj	10,5					620	19	47	38	4									2
Pseudocandona jjj	0,5					16	2	4											
Fabaeroformiscandona jjj			1		4	192		5		1									
SUM:	14,5	56	56	13	104	1110	118	704	344	35	47	32	123	1		120	15	38	5
Species NN	2	5	4	1	6	9	6	7	3	5	5	2	1	1	0	3	2	2	1
Average sp.NN/pool	6		4		11		7		5		6		2		3		2	2	
Asellus aquaticus					3	6					109								
Gammaridae										1									
Gammarus lacustris					2	2	3		6		4								
Dugesia lugubris					3														
Dendrocelus lacteum											1								
Dalyellia viridis										1									
Hydra										1									
Hirudinea																			

Appendix 4. Population density of Chironomidae larvae (N, ind/m2)

spring

Stations	A1	A2	A3	B1	B2	C1	C2	D1	E1	E2	F1	F2	F3	F4	G1	G2	G3	H1	H2	H3	I	K1	K2	K3
Ablabesmyia monilis agg	20,5		1	15	11,5	2	1			2	2	0,5	3	3	3,5		11			0,5	1,5	1	33	
Acamptocladius																								
Acricotopus lucens														2,5									1	

Anatopynia plumipes								3																
Chironomus annularius	1				7	1,5	37			1		3		27	1		14		14				1	12
Chironomus cingulatus											0,5													
Chironomus commutatus														0,5										
Chironomus indet.																		2	4				26	1
Chironomus luridus agg				0,5		0,5	3				0,5	1,5		19,5	1		3	46	52	21			45	8
Chironomus melanescens	1																							
Chironomus nuditaris					0,5																			
Chironomus obtusidens					0,5									1,5										
Chironomus pallidivittatus																								
Chironomus plumosus																								
Chironomus riparius agg					0,5									0,5										
Chironomus longipes		1		1	0	3	2,5	0,5			3	12,5		8	1	11				3	1	12	88	30
Corynoneura coronata					0,5																			
Corynoneura scutellata agg			3	2,5				1	0,5				1,5	0	0,5	1	2			1	2,5		4	
Cricotopus bicinctus				0,5	0,5		0,5							0,5										
Cricotopus cf. elegans																					2			
Cricotopus holsatus																								
Cricotopus gr. sylvestris	1		14	2	0,5	12	1			1	5,5	3	32,5	165	5,5	8	75	1	2	14		1		
Cryptochironomus				0,5	0,5																			
Dicrotendipes lobiger																								1
Dicrotendipes nervosus																							1	
Einfeldia pagana																								2
Endochironomus albipennis					0,5								18,5	41	6,5									
Endochironomus gr. dispar													0,5		0,5	1		4	4	12,5			1	6
Endochironomus tendens																								
Glyptotendipes gripekoveni			1					0,5		1														
Glyptotendipes spec. Ospel															0,5									
Glyptotendipes pallens			1																					
Glyptotendipes paripes																								1
Glyptotendipes indet.													4	0,5	1		3				0,5		1	
Guttipelopia guttipennis																					0,5			
Microtendipes chloris agg				0,5																				
Monopelopia tenuicalcar																					0,5			
Nanocladius (?) distinctus							2																	
Parachironomus gr. arcuatus		1					1				0,5	1,5	9,5	7	5,5		5	2		4,5	1	1	11	12
Parachironomus vitiosus											0,5	0,5			0,5	2								

Paratanytarsus grimmii													**2**	**0,5**										
Paratanytarsus inopertus																	**2**							
Paratanytarsus (indet.)														**0,5**						**0,5**				**1**
Phaenopsectra																				**0,5**				
Polypedilum nubeculosum agg				**0,5**			**1**	**0,5**			**0,5**		**1**	**2**			**1**			**0,5**				
Polypedilum uncinatum agg																			**2**				**3**	
Procladius		**9**	**14**	**13**	**6**	**0,5**		**4**															**1**	
Psectrocladius gr. sordidellus											**0,5**	**0,5**	**2**	**12,5**			**8**			**3,5**			**17**	**1**
Tanypus kraatzi		**1**												**1**										**2**
Tanytarsus usmaensis										**1**				**9**			**1**						**14**	
Thienemanniella flaviforceps					**0,5**																			
Xenopelopia																								
Zavrelia																							**cas e**	
Zavreliella marmorata																					**0,5**			
Zavreliella (?) spec. nov.																				**1**				
SUM:	24	12	34	36	29	20	49	9.5	0,5	6	14	23	75	302	27	23	125	55	78	63	10	15	247	77

summer

Species	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F4	G1	G2	H1	H2	I	K1	K3
Ablabesmyia monilis agg											1								
Acamptocladius																			
Acricotopus lucens																			
Anatopynia plumipes					1	30	1	1											
Chironomus (indet)	1,5	2																	
Chironomus annularius										5									0,5
Chironomus cingulatus																			
Chironomus commutatus																			
Chironomus luridus agg										5		1		2					
Chironomus melanescens																			
Chironomus nuditaris							1			1									
Chironomus obtusidens				1															
Chironomus pallidivittatus												1							
Chironomus plumosus agg		1,5			5														
Chironomus riparius agg																			
Chironomus indet.	0,5		2				1	1						13			0,5	1	
Cladopelma gr. laccophila	1		3	0,5															
Cladopelma gr. lateralis							20	29		1							2		
Cladotanytarsus	1																		

Clinotanypus nervosus						18						1							
Corynoneura coronata																			
Corynoneura scutellata agg				1					2	4	1	2							
Cricotopus bicinctus																			
Cricotopus cf. elegans																			
Cricotopus gr. cylindraceus									6		1							1	
Cricotopus gr. sylvestris		0,5		2,5						1			0,5	1		2		1	
Cricotopus holsatus											1								
Cryptochironomus		0,5	1																
Dicrotendipes lobiger																			0,5
Dicrotendipes nervosus				0,5															
Einfeldia pagana																			
Endochironomus albipennis	0,5		2	0,5				4	2	2	1		0,5						
Endochironomus gr. dispar											1?			1					
Endochironomus tendens							2	1	6		2		0,5						
Glyptotendipes caulicola															2			5	
Glyptotendipes gripekoveni															1				
Glyptotendipes indet.			2	0,5						1	2								
Glyptotendipes mancunianus																			
Glyptotendipes pallens									2	1									
Glyptotendipes paripes		0,5								3									
Glyptotendipes spec. Ospel																			
Guttipelopia guttipennis																			
Microchironomus tener																			
Microtendipes chloris agg																			
Monopelopia tenuicalcar																			
Nanocladius (?) distinctus																			
Parachironomus gr. arcuatus				1															
Parachironomus vitiosus	0,5																		
Paratanytarsus (indet.)																			
Paratanytarsus dissimilis agg			1																
Paratanytarsus grimmii																			
Paratanytarsus inopertus																			
Paratanytarsus lauterborni														1					
Paratanytarsus tenellulus																			
Phaenopsectra																			
Polypedilum nubeculosum agg	6,5	1,5	7		3		2				1						1		
Polypedilum sordens				0,5				1	2		2						0,5		

Polypedilum uncinatum agg																			
Procladius			5		1	10	11	14		8	1		2,5						
Psectrocladius gr. sordidellus																			
Tanypus kraatzi						2	1										0,5		
Tanytarsus	1		1	0,5			4	13			3								
Thienemanniella flaviforceps																			
Xenopelopia																			
Zavrelia																			
Zavreliella (?) spec. nov.																			
Zavreliella marmorata																			
SUM:	13	7	24	9	10	60	43	64	20	32	16	5	4	18	3	2	5	8	1

Appendix 5. Population density of Coleoptera, Heteroptera (N, ind/m2)

spring

Stations	A1	A2	A3	B1	B2	C1	C2	D1	E1	E2	F1	F2	F3	F4	G1	G2	G3	H1	H2	H3	I	K1	K2	K3
Coleoptera																								
Anacaena lutescens																		1						
Haliplus fulvicollis																				1,5				
Haliplus furcatus																				0,5				
Haliplus ruficollis						0,5																		
Helochares obscurus																								
Helophorus granularis						0,5																		
Hydaticus transversalis									0,5															
Hydroporus incognitus																		1						
Hygrotus decoratus						0,5																		
Hygrotus inaequalis																				1				
Hygrotus versicolor						2,5																		
Hyphydrus ovatus						2																		
Laccophilus minutus						2																		
Noterus clavicornis																								
Noterus crassicornis						1					0,5			0,5						3,5	2			
Peltodytes caesus																								
Porhydrus lineatus						1														1	0,5			
Callicorixa praeusta														1,5										
Cymatia bonsdorfii														0,5										

Cymatia coleoptera				3		1,5			1					0,5							1			
Gerris odontogaster											1													
Hesperocorixa linnaei														0,5										
Ilyocoris cimicoides																					2			
Plea minutissima				1		6,5			0,5					1							0,5			
Ranatra linearis																								
Sigara distincta									0,5															
Sigara semistriata				1																	1			
Sigara striata																								
SUM:				5		18			3		2			5				2		8	7			

summer

Species	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F4	G1	G2	H1	H2	I	K1	K3
Coleoptera																			
Acilius canaliculatus					1									1			1		
Acilius sulcatus																	1		
Anacaena lutescens																	1		
Colymbetes fuscus											1								
Cybister lateralimarginalis											1								
Dytiscus circumcinctus															2				
Dytiscus dimidiatus															1				
Graphoderes cinereus																	1		
Gyrinus marinus					8								9						
Haliplus fluviatilis					2														
Haliplus ruficollis					6	4	1		6		1				8		1	1	
Hidrophilus aterrimus															1		1		
Hydaticus transversalis												1							
Hydraena palustris														1					
Hygrotus decoratus															1				
Hygrotus inaequalis														1	12				
Hygrotus versicolor					12	2					1				1		1		
Ilybius fenestratus					1						1						1		
Laccophilus minutus					5						9				1				
Noterus crassicornis											2							1	
Peltodytes caesus					1														
Porhydrus lineatus					12		1				16			1	14		2	4	
Suphrodytes dorsalis															2				

Hetroptera																			
Corixa dentipes																1			
Cymatia coleoptera							1		2	1	16	5	3	1					
Ilyocoris cimicoides					3	2	1		2	1	5	1		3	1		2	2	1
Mesovelia furcata																		1	
Microvelia reticulata														2	1			3	
Notonecta glauca					1						3								
Notonecta lutea								1											
Plea minutissima					4	4			20		2				5		1		
Ranatra linearis				1							2			1			1		
Sigara falleni													1						
Sigara semistriata													1						
Sigara striata											4		5						
SUM:	0	0	0	1	56	12	4	1	#	2	#	7	18	12	52	0	10	12	1

Appendix 6. Population density of Odonata larvae (N, ind/m2)

spring

Stations	A1	A2	A3	B1	B2	C1	C2	D1	E1	E2	F1	F2	F3	F4	G1	G2	G3	H1	H2	H3	I	K1	K2	K3
SPECIES																								
Lestes sponsa				1,5		0,5			1,5		2			4	0,5		2	1		0,5	2		14	
Coenagrionidae					0,5			0,5													3			
Coenagrion sp.																					0,5			
Coenagrion hastulatum																						2		
Coenagrion puella/pulchellum								1													1		2	
Erythromma najas						1		0,5																
Ischnura elegans		1																						
Aeshna sp.									0,5												6			
Somatochlora flavomaculata																			2	0,5				
Leucorrhinia rubicunda																							3	
Libellula quadrimaculata																				0,5				
Sympetrum (perhaps partly *Leucorrhinia)*		1		7	2	2		3,5	0,5		0,5			1			1,5				8		2	
SUM:	0	2	0	9	3	4	0	6	3	0	3	0	0	5	1	0	4	1	2	1	21	2	21	0

summer

Species	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F4	G1	G2	H1	H2	I	K1	K3

SPECIES																			
Coenagrionidae		**6,5**	**1**	**35**	**11**	**30**		**9**	**2**	**3**	**50**		**12**	**7**	**4**		**3,5**	**19**	**1,5**
Coenagrion hastulatum																		**1**	**1,5**
Erythromma najas			**1**	**24**	**4**	**2**		**2**	**10**	**2**	**40**		**0,5**						
Aeshna grandis							**1**										**2**		
Cordulia aenea											**1**						**1**		
Epitheca bimaculata									**2**										
Libellula quadrimaculata											**1**		**0,5**	**1**					
Leucorrhinia pectoralis																			**0,5**
Leucorrhinia rubicunda																		**1**	
SUM:	0	7	2	59	15	32	1	11	14	5	93	0	13	8	4	0	7	21	4

Appendix 7. Population density of Trichoptera and Ephemeroptera (N, ind/m2)

spring

Species	A1	A2	A3	B1	B2	C1	C2	D	E1	E2	F1	F2	F3	F4	G1	G2	G3	H1	H2	H3	I	K1	K2	K3
Limnephilus flavicornis L										**1**														
Limnephilus ? flavicornis P		**7**	**4**	**0,5**	**0,5**	**3**	**3,5**		**0,5**	**1**		**0,5**				**4**		**1**						
Limnephilus other species				**0,5**	**0,5**			**2**				**0,5**												
Oecetis furva											**0,5**	**0,5**									**0,5**			
Phryganeidae								**0,5**																
Triaenodes bicolor											**2,5**	**3**	**0,5**	**0,5**							**2,5**		**11**	**2**
Caenis	**1**		**1**			**0,5**		**0,5**	**0,5**		**0,5**	**3,5**	**0,5**				**1**	**1**			**0,5**		**1**	
Cloeon dipterum	**2**		**2**			**4**			**0,5**		**7**	**1,5**	**2**	**10**		**2**	**2**			**3,5**	**1,5**	**1**	**1**	**1**
SUM:	3	7	7	1	1	8	4	3	2	2	11	10	3	11		6	3	2		4	5	1	13	3

summer

Species	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F4	G1	G2	H1	H2	I	K1	K3
cf. Agrypnia picta											**1**								

Athripsodes aterrimus					1	2													
Holocentropus dubius							1		2										
Holocentropus picicornis															1				
Phryganea bipunctata									4										
Phryganea grandis											1								
Triaenodes bicolor					1	6		1	26	1	7	7	1,5					7	0,5
Tricholeiochiton fagesii																			0,5
Caenis		6,5	1				5	3	2	2	1		0,5	8		38	0,5	2	11
Cloeon dipterum		4	5	28	280	340	21	49	270	64	86	36	103	153	8	38	18	46	11
SUM:		11	6	28	282	348	27	53	304	67	96	43	105	161	9	76	19	55	23

Appendix 8. Population density if other Diptera (N, ind/m2)

spring

Stations	A1	A2	A3	B1	B2	C1	C2	D1	E1	E2	F1	F2	F3	F4	G1	G2	G3	H1	H2	H3	I	K1	K2	K3
Anopheles															0,5						0,5			
Ceratopogonidae															1									
Chaoborus	0,5								12	39			9		14	8	2	11	2	1	0,5	74	9	66
Culex territans																								
Culex indet.																								
Coquilletidia richiardii																						1		
Dixella aestivalis																								
Dixella amphibia																1								
Limoniidae																								
Phalacrocera replicata																				0,5				
Psychodidae																								
Stratiomyidae																								
Tabanidae																								

Tetanoceridae																								
SUM:	1								12	39			9		15	9	2	11	2	2	1	75	9	66

summer

Stations	A1	A2	B1	B2	Ba	C1	C2	C2a	D1	D2	E1	E2	F1	F4	G1	G2	H1	H2	I	K1	K2
Anopheles							**2**			**1**	**12**			**1**					**1**	**2**	
Ceratopogonidae					**1**			**1**													
Chaoborus			**6**								**2**	**2**			**1**	**15**		**2**		**6**	
Culex territans																					
Culex indet.																					
Coquilletidia richiardii																					
Dixella aestivalis																					
Dixella amphibia														**4**							
Limoniidae	**1**													**1**							
Phalacrocera replicata																					
Psychodidae	**1**																				
Stratiomyidae																					
Tabanidae														**1**					**1**		
Tetanoceridae																					
SUM:	1		6		1		2	1		1	14	2		7	1	15		2	2	8	

Appendix 9. Coleoptera and Heteroptera from qualitative samples

Pools	A	B	C	D	E	F	G	H	I	K
Coleoptera										
Peltodytes caesus	2	2				1			1	
Haliplus confinis									1	
Haliplus flavicollis									1	
Haliplus fluviatilis		3								
Haliplus fulvicollis								2		
Haliplus furcatus								2		
Haliplus ruficollis				1	1	1	2		1	
Noterus clavicornis		1				2				5
Noterus crassicornis			9			9	16	41	2	69
Hyphydrus ovatus	5		5		3					
Bidessus unistriatus							1	4		3

Bidessus grossepunctatus										1
Coelambus impressopunctatus		1	1			13	2	6		1
Hygrotus decoratus		1	1					8		12
Hygrotus inaequalis	1	1	1			4	5	1	1	1
Hygrotus quinquelineatus		1								
Hygrotus versicolor		21	23		4	1				2
Suphrodytes dorsalis					1					
Hydroporus angustatus								6		1
Hydroporus tristis								1		
Hydroporus umbrosus								8		5
Hydroporus palustris				3						
Hydroporus incognitus								5		3
Hydroporus erythrocephalus								1		4
Hydroporus fuscipennis										1
Hydroporus rufifrons								3		
Graptodytes pictus			1							
Graptodytes granularis								2		4
Graptodytes bilineatus							1			
Porhydrus lineatus	3	1	12	3			6			2
Laccophilus hyalinus		1	1							
Laccophilus minutus	1	1				12				
Copelatus haemorrhoidalis								1		2
Agabus fuscipennis		1		3						
Agabus undulatus								1		
Ilybius fenestratus					3					
Ilybius subaeneus	1							1		
Rhantus bistriatus										1
Rhantus notatus						1				
Rhantus latitans		5	2	1		1			1	1
Hydaticus seminiger								1		
Hydaticus transversalis								1		
Graphoderes bilineatus			2		2				1	
Graphoderes cinereus										1
Dytiscus circumcinctus	1									

Cybister lateralimarginalis	1									
Gyrinus marinus	2	9		5						
Gyrinus natator			1				1			
Helophorus granularis										
Helophorus griseus		2								
Hydrochus brevis						1		1		
Hydrochus carinatus									1	1
Hydrochus ignicollis				5						
Spercheus emarginatus						1				
Coelostoma orbiculare								1		
Hidrophilus aterrimus	1		1							
Hydrochara caraboides		1				3				
Hydrobius fuscipes						1		2		2
Anacaena lutescens										4
Laccobius biguttatus		1				7				
Laccobius minutus	2									
Helochares obscurus						6		2	3	3
Enochrus affinis		1				10		7	1	7
Enochrus coarctatus										3
Enochrus quadripunctatus		2				5				
Enochrus testaceus								1		
Berosus luridus						1				1
Berosus signaticollis										1
Dryops auriculatus	1	3	1			5	4	3		1
Dryops griseus						1	1			
Hetroptera										
Cymatia bonsdorfii										
Cymatia coleoptera	7	9	6	4	1	2	2		3	
Hesperocorixa linnaei										1
Callicorixa praeusta	1									
Sigara distincta										
Sigara semistriata		6	1	1	1	1				
Sigara striata	15								3	
Notonecta glauca	1		1			1				

Plea minutissima	5	12	24	5	3	6		7	2	
Ilyocoris cimicoides	1	3	1		1	6	1		10	1
Nepa cinerea			2	2				2		1
Ranatra linearis	1	2				2			1	
Gerris lacustris			1	2		1				
Gerris odontogaster		1	3	2	2					
Limnoporus rufoscuttelatus				6						
SUM:	52	92	100	43	22	105	42	121	33	145

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