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Deliverable No. 120 Indicator value database for Plecoptera

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Organisation name of lead contractor for this deliverable:

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BOKU – Schmidt-Kloiber A., Vogl R., Graf W.

NERC – Murphy J.

SLU – Locke, S.

UGR – Tierno de Figueroa, J. M., López Rodríguez, M. J.

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Dissemination Level (tick appropriate box)		
PU	Public	
PP	Restricted to other programme participants (including the Commission Services)	X
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

1 About the indicator value database for Plecoptera

By an intense literature study autecological information about the order Plecoptera were gathered by researchers of 5 different institutes. These information were merged and comprised to fit into a query database implemented in the website www.freshwaterecology.info. Several parameters of the autecological information are already online available. The discussion process between the different researchers about the numerical indicator values for the species progresses parameter by parameter. A final version of all parameters on the web is expected for end of 2006.

As the ecological data collected for the database are not yet scientifically published, the Plecoptera database is currently restricted to registered users only. Access may be granted to Euro-limpacs participants after sending an email to Daniel Hering (daniel.hering@uni-due.de) and/or Astrid Schmidt-Kloiber (astrid.schmidt-kloiber@boku.ac.at).

2 Indicator values

Numerous candidate parameters to describe the indicator function of Plecoptera regarding climate change were reviewed. The following 30 parameters were identified to be both sensible and compileable from literature and expert knowledge.

- ecoregional distribution
- stream zonation preference
- microhabitat preference
- current preference
- feeding type
- locomotion type
- temperature preference
- reproductive cycles
- life cycle duration
- aquatic stages
- resistance to droughts
- reproduction
- dissemination strategy
- resistance form
- respiration
- hydrologic preference
- salinity preference
- pH preference
- flight/emergence period
- larval development cycle
- altitude preference
- rare species (ecoregion)

- red list species (national)
- FFH species
- endemism (micro, bioregion, ecoregion)
- disjunct isolated population
- r-/K-strategy
- sensitive species (ecoregion)
- invasive species (ecoregion)
- dispersal capacity

For the collection of the ecological information 1405 literature references were used. The work was divided among partners according to the following scheme:

- collecting zoogeographical and ecological information of the Alps & South Eastern Europe, transformation of this information into numerical scores: Wolfram Graf (BOKU)
- collecting ecological information of Northern and North-Western Europe, transformation of this information into numerical scores: John Murphy & Sophie Locke (NERC & SLU)
- collecting ecological information of the Mediterranean Area, transformation of this information into numerical scores: Manuel Jesús López Rodríguez, Juan Manuel de Figueroa (UGR)
- collecting ecological information of Central and Eastern Europe, transformation of this information into numerical scores: Armin Lorenz (UDE)
- compilation of the different regional databases: Armin Lorenz (UDE)

Currently the database holds 589 Plecoptera taxa.

3 Usage of the web-database

Main steps of usage are explained in Deliverable 31.

3.1 Login

Login the database in the top left corner of the website www.freshwaterecology.info.

3.2 Taxagroup and country

Tick the checkbox "Plecoptera" within the "Taxagroup"-selection. Tick the checkbox of the country (countries) you want to have displayed within the "Country"-selection.

The screenshot shows the search interface of the Freshwaterecology.info website. The browser address bar displays the URL http://www.freshwaterecology.info/TaxaDB_Search.php. The page title is "freshwaterecology.info" and the navigation menu includes "Home", "About the database", "Experts", and "Euro-Impacs".

On the left side, there is a sidebar with the following sections:

- Logged in
- Logout
- Options
 - Advanced search
 - Advanced display values
- Help
 - How to use the database
 - Abbreviations
 - Database administrator

The main content area is titled "Search" and contains two main sections:

Taxagroup

<input type="checkbox"/> Porifera	<input type="checkbox"/> Coelenterata	<input type="checkbox"/> Turbellaria	<input type="checkbox"/> Nematomorpha
<input type="checkbox"/> Nemertini	<input type="checkbox"/> Gastropoda	<input type="checkbox"/> Bivalvia	<input type="checkbox"/> Polychaeta
<input type="checkbox"/> Oligochaeta	<input type="checkbox"/> Hirudinea	<input type="checkbox"/> Branchiobdellida	<input type="checkbox"/> Araneae
<input type="checkbox"/> Hydrachnidia	<input type="checkbox"/> Crustacea	<input type="checkbox"/> Ephemeroptera	<input type="checkbox"/> Odonata
<input checked="" type="checkbox"/> Plecoptera	<input type="checkbox"/> Heteroptera	<input type="checkbox"/> Megaloptera	<input type="checkbox"/> Planipennia
<input type="checkbox"/> Coleoptera	<input type="checkbox"/> Hymenoptera	<input type="checkbox"/> Trichoptera	<input type="checkbox"/> Lepidoptera
<input type="checkbox"/> Diptera	<input type="checkbox"/> Bryozoa		

Buttons:

Country

Europe (EU)

<input checked="" type="checkbox"/> Austria (AT)	<input type="checkbox"/> Belgium (BE)*	<input type="checkbox"/> Bulgaria (BG)*	<input type="checkbox"/> Czech Republic (CZ)
<input type="checkbox"/> Denmark (DK)	<input type="checkbox"/> Finland (FI)*	<input type="checkbox"/> France (FR)	<input type="checkbox"/> Germany (DE)
<input type="checkbox"/> Greece (GR)	<input type="checkbox"/> Italy (IT)	<input type="checkbox"/> Latvia (LV)	<input type="checkbox"/> Netherlands (NL)
<input type="checkbox"/> Norway (NO)*	<input type="checkbox"/> Poland (PL)	<input type="checkbox"/> Portugal (PT)	<input type="checkbox"/> Romania (RO)*
<input type="checkbox"/> Slovak Republic (SK)	<input type="checkbox"/> Spain (ES)*	<input type="checkbox"/> Sweden (SE)	<input type="checkbox"/> Switzerland (CH)
<input type="checkbox"/> Ukraine (UA)*	<input type="checkbox"/> United Kingdom (GB)		

* not all taxagroups available

Display only taxa occurring in all selected countries

Buttons:

Buttons:

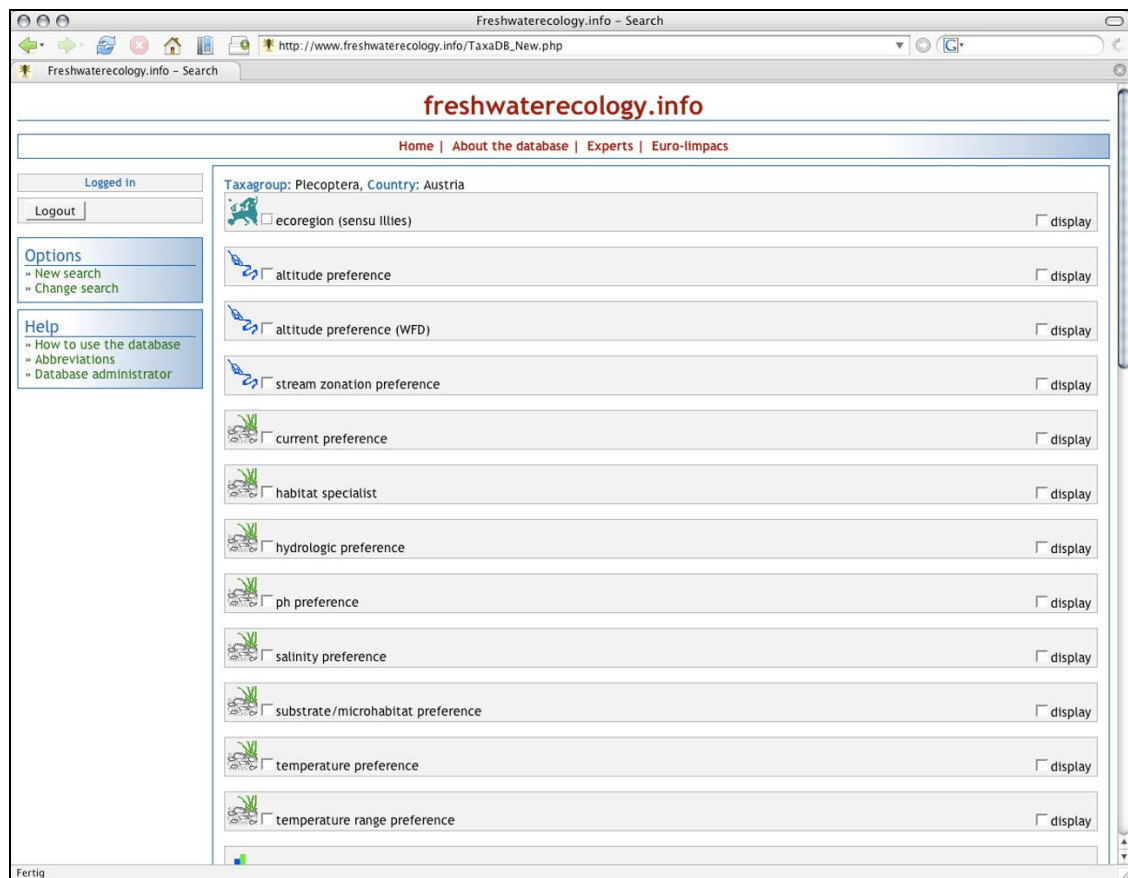
Two images of aquatic insects are shown on the right side of the page: a damselfly nymph and a stonefly nymph.

3.3 Query of ecological parameters

Press the button "Ecological parameters" (only available if you are logged in).

Select the ecological parameter that you want to query by ticking the checkbox left of the name of the parameter. If you want to have this (or another) parameter displayed within the "Results"-page, additionally tick the "display"-checkbox on the right hand side.

The database offers the possibility to query not only one ecological parameter but also two or more parameters at the same time.



Example for the query of only one parameter (ecoregion):

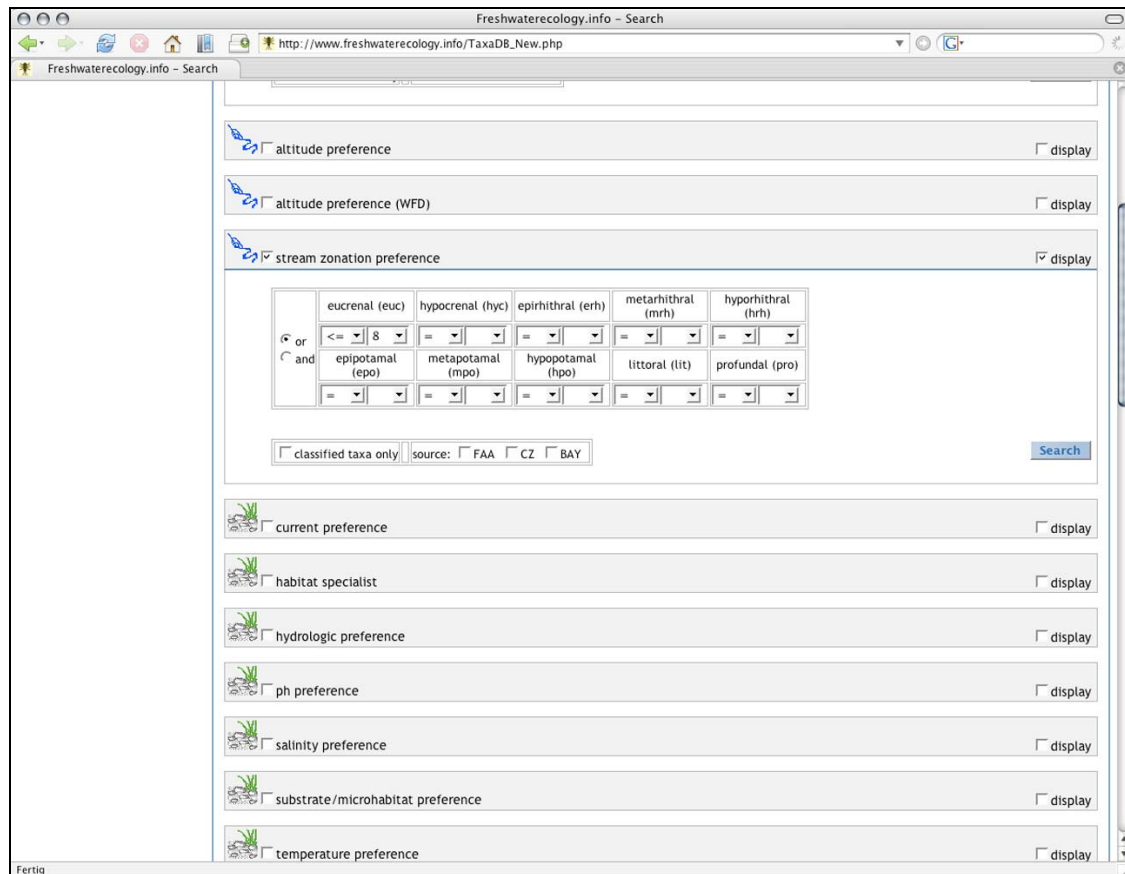
Tick the checkbox of those ecoregions for which you want to display the Plecoptera species occurrence within the "Results"-page.

The screenshot shows the 'freshwaterecology.info' search interface. The browser address bar displays 'http://www.freshwaterecology.info/TaxaDB_New.php'. The page title is 'freshwaterecology.info' with navigation links for 'Home', 'About the database', 'Experts', and 'Euro-Ilmpacs'. The user is logged in, with a 'Logout' button. On the left, there are sections for 'Options' (New search, Change search) and 'Help' (How to use the database, Abbreviations, Database administrator). The main search area is titled 'Taxagroup: Plecoptera, Country: Austria'. A search filter for 'ecoregion (sensu Illies)' is active, with a 'display' checkbox. Below this, a grid of 25 ecoregions is listed, each with a checkbox: Iberic-Macaronesian Region (ER1), Pyrenees (ER2), Italy, Corsica and Malta (ER3), Alps (ER4), Dinaric Western Balkan (ER5), Hellenic Western Balkan (ER6), Eastern Balkan (ER7), Western Highlands (ER8), Central Highlands (ER9), The Carpathians (ER10), Hungarian Lowlands (ER11), Pontic Province (ER12), Western Plains (ER13), Central Plains (ER14), Baltic Province (ER15), Eastern Plains (ER16), Ireland and Northern Ireland (ER17), Great Britain (ER18), Iceland (ER19), Borealic Uplands (ER20), Tundra (ER21), Fenno-Scandian Shield (ER22), Taiga (ER23), The Caucasus (ER24), Caspic Depression (ER25), North Africa (ERX), and Middle East (ERY). A 'Search' button is located to the right of the grid. Below the grid, there are filters for 'classified taxa only' and 'source: Illies ELEC'. At the bottom, there are six preference options, each with a 'display' checkbox: altitude preference, altitude preference (WFD), stream zonation preference, current preference, habitat specialist, and hydrologic preference. The word 'Fertig' is visible in the bottom left corner.

Example for the simultaneous query of two parameters (stream zonation preference, feeding type):

Define the stream zonation preference (here: all Plecoptera species which do not prefer the eucrenal/spring section of rivers indicated by less than 8 points within the "eucrenal"-field) and the feeding type (here: no specification which means that all feeding types will be displayed) that you are interested in.

Parameters can be combined with an "or"- or an "and"-relation on the lower end of the site.



Freshwaterecology.info - Search

http://www.freshwaterecology.info/TaxaDB_New.php

Freshwaterecology.info - Search

dissemination strategy display

duration emergence period display

emergence period display

endemism display

feeding type display

or and	grazer and scrapers (gra)	miners (min)	xylophagous taxa (xyl)	shredders (shr)	gatherers/collectors (gat)
	active filter feeders (aff)	passive filter feeders (pff)	predators (pre)	parasites (par)	other feeding type (oth)

classified taxa only source: FAA CZ BAY

indicator species for display

life duration display

locomotion type display

occurrence in large quantities display

r- K-strategy display

Fertig

3.4 Results-page

Example for the results of the query of only one parameter (ecoregion):

The "Results"-page offers a list of Plecoptera, showing the ecoregions in which these species occur on the right hand side.

The numbers displayed in the table give the numbers of the ecoregions.

The screenshot shows a web browser window with the URL http://www.freshwaterecology.info/TaxaDB_ResNew.php. The page title is "freshwaterecology.info" and it includes navigation links for Home, About the database, Experts, and Euro-impacs. The search results are for the taxagroup "Plecoptera" in "Austria", with the selected parameter being "ecoregion (sensu Illies)".

The table displays the following data:

Taxon	country	ecoregion (sensu Illies)																							
	AT	ER1	ER2	ER3	ER4	ER5	ER6	ER7	ER8	ER9	ER10	ER11	ER12	ER13	ER14	ER15	ER16	ER17	ER18	ER19	ER20	ER21	ER22	ER23	
Plecoptera																									
CAPNIIDAE																									
Capnia bifrons	AT	1		3			6	7	8	9	10	11	12	13	14	15	16	17	18		20				
Capnia nigra	AT	1	2	3	4			7	8	9	10			13	14	15	16								23
Capnia vidua rilensis	AT																								
Capnia vidua vidua	AT		2	3	4	5	6	7	8	9	10								18	19	20	21			
Capnioneura nemuroides	AT			3	4																				
Capnopsis schilleri	AT			3		5	6	7		9	10				14	15					20	21	22	23	
CHLOROPERLIDAE																									
Chloroperla susemicheli	AT				4				8	9															
Chloroperla tripunctata	AT	1	2	3	4	5	6	7	8	9	10								17	18					
Isoptena serricornis	AT										10	11			14	15	16							22	23
Siphonoperla montana	AT				4	5																			
Siphonoperla neglecta	AT					5	6	7	8	9	10														
Siphonoperla taurica	AT												12		14	15	16								
Siphonoperla torrentium	AT	1	2	3	4	5		7	8	9	10								17	18					
Xanthoperla apicalis	AT	1		3			6	7						13	14	15	16				20	21	22	23	
LEUCTRIDAE																									
Leuctra albida	AT				4	5	6	7	8	9	10														
Leuctra alpina	AT			3	4					9	10														
Leuctra armata	AT				4						10														
Leuctra astridae	AT																								
Leuctra aurita	AT	1	2		4				8	9	10														
Leuctra autumnalis	AT				4				8	9	10														

Distribution maps of the queried taxa:

The ecoregional "Results"-page offers also the possibility to visualize the distribution of the queried taxa. On the right hand side behind every taxon a small button with a map can be clicked. Then, a map of Europe appears with the ecoregional distribution of this certain species marked in green.

The screenshot displays the freshwaterecology.info website interface. At the top, the browser address bar shows the URL http://www.freshwaterecology.info/TaxaDB_ResNew.php. The website header includes the logo "freshwaterecology.info" and navigation links: "Home | About the database | Experts | Euro-Impacs".

On the left side, there is a "Logged in" status and a "Logout" button. Below this, there are sections for "Options" (New search, Change search, New parameter, Change parameter) and "Help" (How to use the database, Abbreviations, Database administrator).

The main content area shows a search result for "Austria (sensu Illies)". Below the search criteria, there is a table with columns for ecoregions (ER1, ER2, ER3, ER4, ER5) and a grid of checkboxes. A modal window titled "Distribution map: Capnia bifrons" is overlaid on the page. This window shows a map of Europe with green shaded areas indicating the distribution of the species. A specific ecoregion, "ER13 - Western Plains", is highlighted. The map source is cited as "Source of Map (modified): © European Environment Agency, Copenhagen, 2004 (www.eea.eu.int)".

At the bottom left of the browser window, the word "Fertig" is visible.

Example for the results of the simultaneous query of two parameters (stream zonation preference, feeding type):

The "Results"-page offers a list of those Plecoptera, which do not prefer the eucrenal/spring section of rivers. Additionally the feeding types of those species are displayed. The parameter for which a criterion was defined in the query is marked in green.

Abbreviations are explained as tool-tips.

freshwaterecology.info

Home | About the database | Experts | Euro-limpacs

Logged in
Logout

Options
 » New search
 » Change search
 » New parameter
 » Change parameter

Help
 » How to use the database
 » Abbreviations
 » Database administrator

Taxagroup: Plecoptera, Country: Europe
 Selected parameters: stream zonation preference: (zeu <=8), feeding type: ,

Taxon	country	stream zonation preference										feeding type									
		eu	hyc	erh	mrh	hrh	epo	mpo	hpo	lit	pro	gra	min	xyl	shr	gat	aff	pff	pre	par	oth
Plecoptera																					
CAPNIIDAE																					
Capnia atra	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Capnia bifrons	EU	0	0	1	2	3	2	2	0	0	0	2	0	0	6	2	0	0	0	0	
Capnia nigra	EU	0	0	2	5	2	0	0	0	1	0	2	0	0	6	2	0	0	0		
Capnia pygmaea	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Capnia vidua collarti	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Capnia vidua rilensis	EU	0	2	8	0	0	0	0	0	0	0	2	0	0	6	2	0	0	0		
Capnia vidua vidua	EU	0	2	8	0	0	0	0	0	0	0	2	0	0	6	2	0	0	0		
Capnia zaicevi	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Capnioneura aptera	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Capnioneura balkanica	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Capnioneura brachyptera	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Capnioneura gelesae	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Capnioneura libera	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Capnioneura mitis	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Capnioneura narcea	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Capnioneura nemuroides	EU	0	0	10	0	0	0	0	0	0	0	2	0	0	6	2	0	0	0		
Capnioneura pettierae	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Capnioneura petricola	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Capnioneura valandovi	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Capnopsis schilleri	EU	0	0	1	2	3	3	1	0	0	2	0	0	6	2	0	0	0	0		
Mesocapnia variabilis	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CHLOROPERLIDAE																					
Chloroperla acuminata	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Chloroperla acuta	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Chloroperla brachyptera	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Chloroperla breviata	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Chloroperla kisi	EU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

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4 Timetable

All parameters that are not available at the moment will be integrated in the web database during the next months. The Plecoptera database will then continuously be updated regarding new ecological information. A scientific publication is planned for the year 2007.