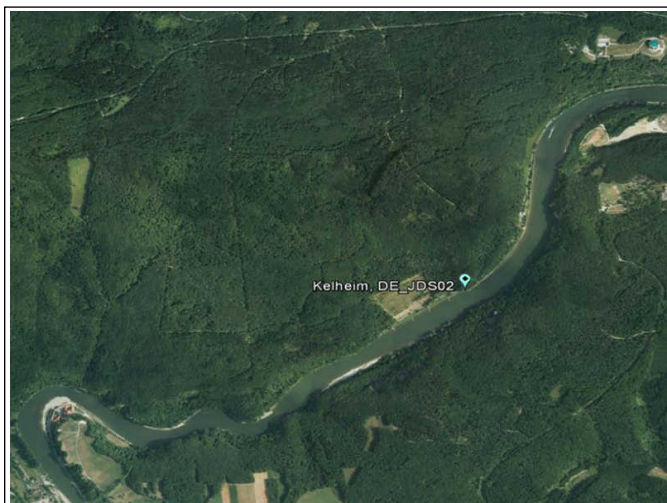


**Danube****Kelheim, DE\_JDS02 (DE\_JDS02 ), 14.August 2013**

FDA\_ID 220



Pic. 1: Map of monitoring site / ÖK 1:50.000



Pic. 2: Monitoring site Kelheim, DE\_JDS02

**Description of monitoring site***- no data -***Assessment****Estimated assessment of the ecological status class (FÖZ)**

Biological quality element fish	None
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**Ecological status class, current survey, 14.August 2013**

Biological quality element fish	FIA 2.08	Class 2	Good
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**Former classifications**

None				
None				
None				

## Information about and sampling conditions and location

Table 1: Key data and information on sampling, monitoring siteKelheim, DE\_JDS02

Watercourse name	<b>Danube</b>	Federal state	<b>not available</b>
Monitoring site	<b>Kelheim, DE_JDS02</b>	District	
Monitoring site number	<b>DE_JDS02</b>	Community	
Turnus number		Longitude (WGS 84, decimal) O	<b>11.84761</b>
sampling number		Latitude (WGS 84, decimal) N	<b>48.90599</b>
Survey-ID (FDA)	<b>220</b>	Route-ID	
Date	<b>8/14/2013</b>	River-km [monitoring site]	
Contracting authority	<b>ICPDR</b>	Number of planing area	
Contractor	<b>LFU Bayern</b>	Detail waterbody	
Project manager	<b>Jörg Brandner</b>		
Reason of survey	<b>JDS 3</b>		
Fishing category			
Bioregion		Waters ordinal number	
Fish bioregion	<b>Western Alpine Foothills Danube (2581-2225) (2)</b>	Huet-zonation	<b>barbel zone</b>
Biocenotic Region	<b>Epipotamon large</b>	Adapt. Reference	<b>102</b>
River km mean	<b>2,420.0</b>	Altitude [m.a.s]	<b>340</b>
		Ø catchment basin [km²]	<b>13,020</b>
Section length [m]	<b>3,000</b>	Catchment-class	<b>more than 10.000km²</b>
Ø channel width [m]	<b>95</b>	Slope [‰]	<b>0.2</b>
Original stream character	<b>foothills stream -river</b>	Discharge regime	
Actual site character			
Actual impact		Reference watergauge (name, number)	
Flow [semiquant.]		Distance from source [km]	<b>431.0</b>
Average water depth [m]		Lake above	<b>No</b>
Maximum water depth [m]		Distance lake upstream [km]	
Geology	<b>calcareous</b>	Lake below	
Influence of sediment transport	<b>slightly affected</b>	Distance lake downstream [km]	
Ø wetted width [m]	<b>90</b>	Flow condition	
pH-value		Visible depth	
SBV		Fishing conditions	
Water temperature [°C] (F117)		Average annual air temperature [°C]	<b>7.8</b>
Conductance, 25°C [µS/cm] (F118)			
Methods used and effort			
<b>Strip-fishing, day</b>		Number of runs	<b>1</b>
Fished length [m]	<b>2,850</b>	E-devices output [kW]	<b>13</b>
Fished area [m²]	<b>10,350</b>	Output voltage	<b>600</b>
		Number of anodes	
		Number of strips/sections	<b>8</b>
and additional methods	<b>Fished area [m²]</b>	additional methods	<b>Effort [UE]</b>
E-Fishing by night	<b>9,000</b>		

### Comments on survey:

Befischung nur durch national team- Befischung mit 2 Polen (Gleichstrom, Streifenbreite 2x 1,5m) bzw. Ausleger (gepulster Gleichstrom, Streifenbreite 6m)- Fangerfolg 100% da Daten alle Fische berücksichtigen (FIBS)- NICHT direkt mit leitfadenkonformen Befischungen vergleichbar!!

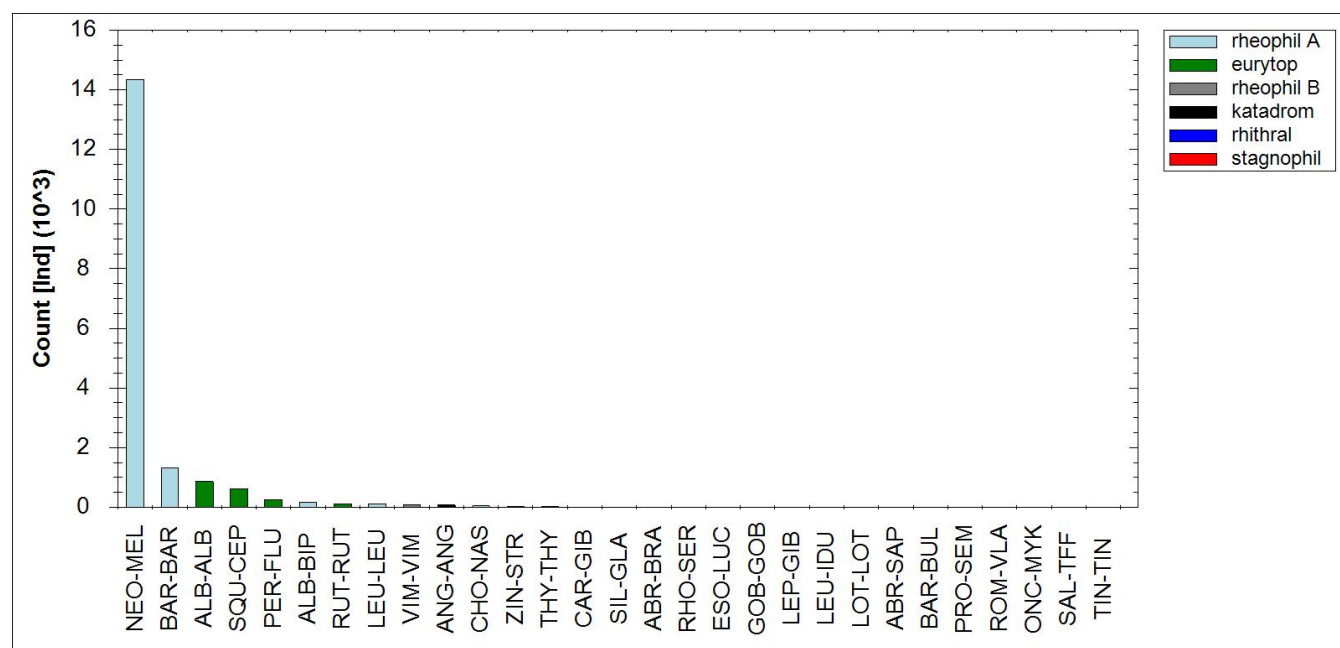
Table 2: Sampling effort at the monitoring site Kelheim, DE\_JDS02, August 2013

Habitat	Str. no	DG	Length [m]	Width [m]	UE	Method
rip-rap	5	1	250	3		E-fishing day boat
rip-rap	7	1	250	3		E-fishing day boat
groin	1	1	500	3		E-fishing day boat
groin	2	1	350	3		E-fishing day boat
groin	3	1	250	3		E-fishing day boat
groin	10	1	400	6		E-fishing night
gravel bar	4	1	250	3		E-fishing day boat
gravel bar	6	1	400	3		E-fishing day boat
gravel bar	8	1	600	6		E-fishing day boat
gravel bar	9	1	600	6		E-fishing night
gravel bar	11	1	500	6		E-fishing night

Table 3: Habitat weighting used at the monitoring site Kelheim, DE\_JDS02

Habitat	%
gravel bar	35
groin	35
rip-rap	30

### Catch result, fish assemblage and threatening status



Pic. 3: Species ranking diagram of catch results Danube, Kelheim, DE\_JDS02

Table 4: Reference fish assemblage, allochthonous species and threat status

Family	English name	Scient. name of species	Reference fish assemblage	FHH	Red List	IUCN	Count
Petromyzontidae	Ukrainian lamprey	<i>Eudontomyzon mariae</i>	s	II	VU	DD	
Salmonidae	Brown trout	<i>Salmo trutta fario</i>	s	-	NT		1
	Danube salmon	<i>Hucho hucho</i>	b	II; V	EN	EN	
Thymallidae	Greyling	<i>Thymallus thymallus</i>	s	V	VU	LC	16
Cyprinidae	Asp	<i>Aspius aspius</i>	s	II	EN	DD	
	Barbel	<i>Barbus barbus</i>	I	V	NT	LC	1,313
	Bitterling	<i>Rhodeus amarus</i>	s	II	VU	LC	5
	Bleak	<i>Alburnus alburnus</i>	I	-	LC	LC	868
	Bream	<i>Abramis brama</i>	b	-	LC		5
	Carp	<i>Cyprinus carpio</i>	b	-	EN	DD	
	Chub	<i>Squalius cephalus</i>	I	-	LC	LC	616
	Crucian carp	<i>Carassius carassius</i>	s	-	EN	LC	
	Dace	<i>Leuciscus leuciscus</i>	I	-	NT	LC	110
	Danube roach	<i>Rutilus pigus</i>	b	II; V	EN	DD	
	Danubian gudgeon	<i>Romanogobio uranoscopus</i>	s	II	CR	DD	
	Gudgeon	<i>Gobio gobio</i>	I	-	LC	LC	3
	Ide	<i>Leuciscus idus</i>	b	-	EN	LC	3
	Minnow	<i>Phoxinus phoxinus</i>	b	-	NT	LC	
	Nase	<i>Chondrostoma nasus</i>	I	-	NT	LC	47
	Prussian carp	<i>Carassius gibelio</i>	s	-	LC		10
	Roach	<i>Rutilus rutilus</i>	I	-	LC	LC	125
	Rudd	<i>Scardinius erythrophthalmus</i>	s	-	LC	LC	
	Spirlin	<i>Alburnoides bipunctatus</i>	b	-	LC	LC	156
	Tench	<i>Tinca tinca</i>	s	-	VU	LC	1
	Vimba bream	<i>Vimba vimba</i>	b	-	VU	LC	73
	White bream	<i>Blicca bjoerkna</i>	b	-	LC	LC	
	White-finned gudgeon	<i>Romanogobio vladykovi</i>	s	II	LC	DD	2
Esocidae	Pike	<i>Esox lucius</i>	b	-	NT		3
Gadidae	Burbot	<i>Lota lota</i>	b	-	VU		3
Percidae	Perch	<i>Perca fluviatilis</i>	I	-	LC	LC	261
	Pikeperch	<i>Sander lucioperca</i>	s	-	NT	LC	
	Ruffe	<i>Gymnocephalus cernuus</i>	b	-	LC	LC	
	Schraetser	<i>Gymnocephalus schraetser</i>	s	II; V	VU	VU	
	Streber	<i>Zingel streber</i>	s	II	EN	VU	20
	Zingel	<i>Zingel zingel</i>	s	II; V	VU	VU	
Siluridae	Wels catfish	<i>Silurus glanis</i>	s	-	VU	LC	10
Cottidae	Bullhead	<i>Cottus gobio</i>	b	II	NT	LC	
Cobitidae	Spined loach	<i>Cobitis taenia</i>	s	II	VU	LC	
	Weatherfish	<i>Misgurnus fossilis</i>	s	II	CR	NT	
Balitoridae	Danube bream	<i>Abramis sapa</i>	s	-	EN		2
	Stone loach	<i>Barbatula barbatula</i>	b	-	LC	LC	2
Salmonidae	Rainbow trout	<i>Oncorhynchus mykiss</i>		-	NE		1
Gobiidae	Round goby	<i>Neogobius melanostomus</i>		-	NE	DD	14,347
	Tubenose goby	<i>Proterorhinus semilunaris</i>		-	EN	LC	2
Centrarchidae	Pumkinseed	<i>Lepomis gibbosus</i>		-	NE		3

Family	English name	Scient. name of species	Reference fish assemblage	FHH	Red List	IUCN	Count
Anguillidae	Eel	<i>Anguilla anguilla</i>		-	RE		69

Observed:: reference fish assemblage 24 Taxa :: 41 Taxa

Taxa complete 29

Count species of reference fish assemblage 3,655

Total count 18,077

Fish ecological reference fish assemblage (Haunschmid et al., 2006)

- I Dominant species
- b Subdominant species
- s Rare species
- a! Allochthon
- N! Neozoa

FFH...Fauna-Flora-Habitat-Directive (Council Directive 92/43/EEC of 21.Mai 1992)

- II Species listed in Annex II of the FFH- Directive (nature reserves have to be set out for this species)
- IV Species listed in Annex IV of the FFH- Directive (strict protection of animals and plants)
- V Species listed in Annex V of the FFH- Directive (species whose collection and use is subject to administrative control)
- RE Regionally extinct
- CR Critically endangered
- EN Endangered
- VU Vulnerable
- NT Near threatened
- LR Lower risk
- LC Least concern
- DD Available data is not sufficient for classification (data deficient)
- NE Not evaluated, usually widespread and replicating alien species

## Abundance and biomass

Table 5: abundance and biomass (e-fishings) Danube, Kelheim, DE\_JDS02, 8/14/2013

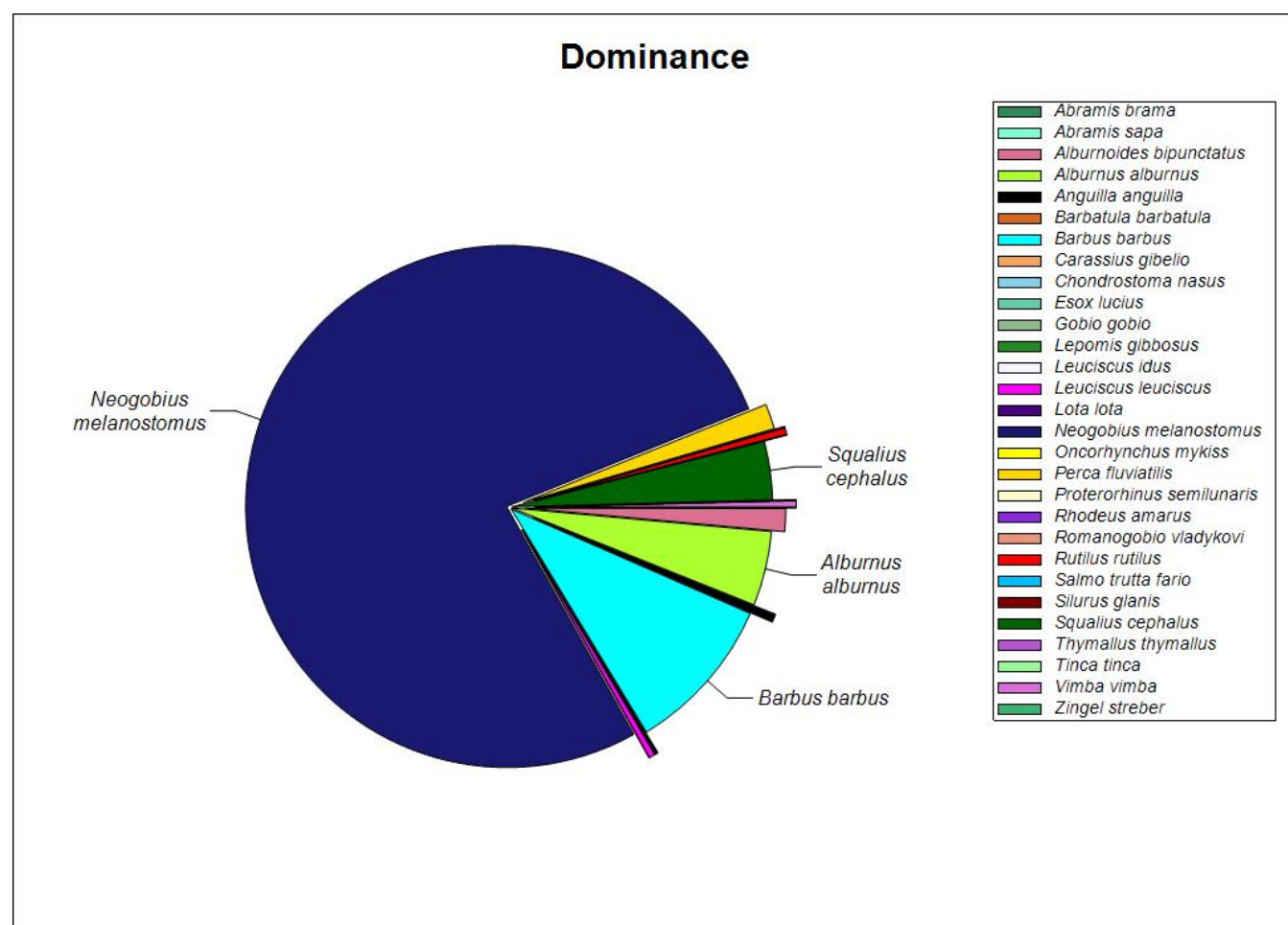
English name	Species Code	Count	Abu [Ind/ha]	95% Konfid.	Biom [kg/ha]	95% Konfid.	Weight [g] median allover	Mean Weight [g] total	Population structure	Reference fish assemblage
Barbel	BAR-BAR	1,313	2,029.6		6.8		6.5	3.3	1	I
Bitterling	RHO-SER	5	6.8		0.0		3.4	0.6	3	s
Bleak	ALB-ALB	868	957.8		12.0		10.1	12.5	1	I
Bream	ABR-BRA	5	5.0		1.5		12.3	305.4	4	b
Brown trout	SAL-TFF	1	1.0		0.0		15.3	34.6	4	s
Burbot	LOT-LOT	3	4.8		2.1		41.3	441.7	3	b
Chub	SQU-CEP	616	751.3		37.7		9.6	50.2	1	I
Dace	LEU-LEU	110	76.5		7.8		17.5	101.5	2	I
Danube bream	ABR-SAP	2	2.0		0.0		3.3	0.2	4	s
Eel	ANG-ANG	69	100.4		25.7		50.2	256.4	3	
Greyling	THY-THY	16	9.6		0.1		8.9	7.0	3	s
Gudgeon	GOB-GOB	3	3.9		0.1		15.0	24.1	4	I
Ide	LEU-IDU	3	2.0		0.2		17.2	80.6	3	b
Nase	CHO-NAS	47	14.0		10.9		29.2	777.4	2	I
Perch	PER-FLU	261	324.2		14.7		13.4	45.4	1	I
Pike	ESO-LUC	3	3.8		2.2		51.7	578.3	3	b
Prussian carp	CAR-GIB	10	12.6		2.3		20.0	178.2	3	s
Pumpkinseed	LEP-GIB	3	3.0		0.0		7.5	7.3	4	
Rainbow trout	ONC-MYK	1	0.0		0.0	0.0	35.0	0.0	4	
Roach	RUT-RUT	125	83.0		3.2		15.0	38.6	2	I

English name	Species Code	Count	Abu [Ind/ha]	95% Konfid.	Biom [kg/ha]	95% Konfid.	Weight [g] median allover	Mean Weight [g] total	Population structure	Reference fish assemblage
Round goby	NEO-MEL	14,347	15,991.9		212.8		8.8	13.3	1	
Spirlin	ALB-BIP	156	292.9		0.2		4.0	0.6	3	b
Stone loach	BAR-BUL	2	2.5		0.0		7.5	3.1	4	b
Streber	ZIN-STR	20	0.0		0.0	0.0	13.6	0.0	2	s
Tench	TIN-TIN	1	1.9		0.5		25.0	235.8	4	s
Tubenose goby	PRO-SEM	2	2.0		0.0		5.3	1.7	3	
Vimba bream	VIM-VIM	73	78.3		0.0		8.0	0.6	2	b
Wels catfish	SIL-GLA	10	6.9		9.4		48.1	1,359.1	3	s
White-finned gudgeon	ROM-VLA	2	3.8		0.0		7.5	3.7	4	s

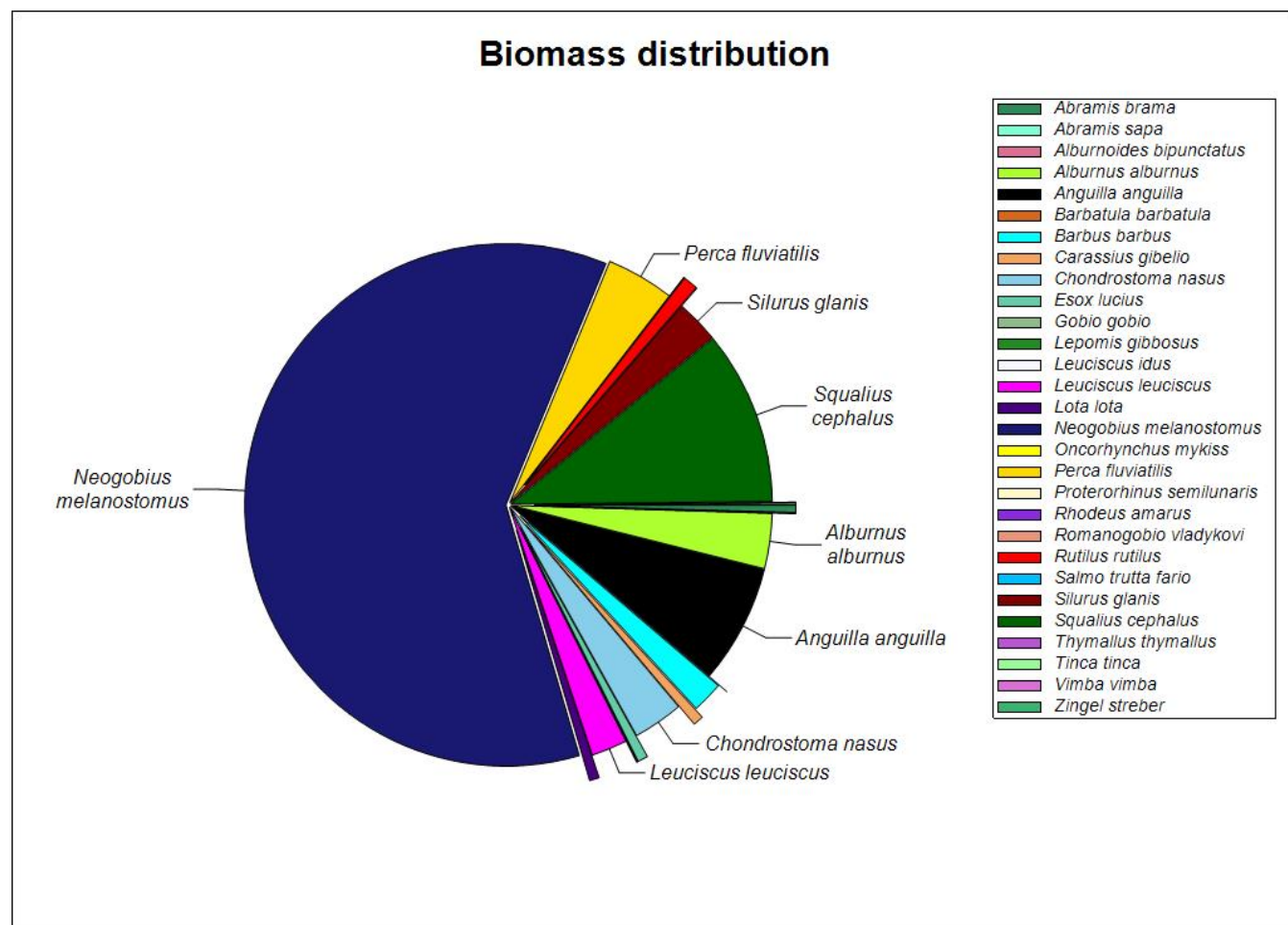
24 species of 42

Total 18,077 20,771.5

350.1







Pic. 4: Dominance und Biomass distribution

Shannon-Index: 0.901

Equitability: 0.268

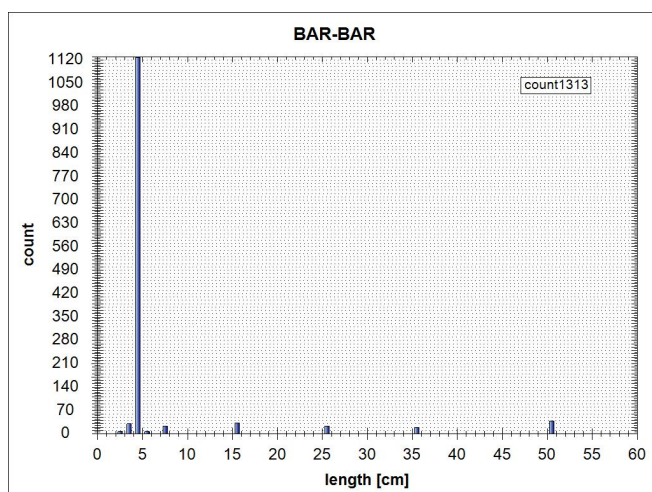
**Biometrics and catch rate**

Table 6: biometrics of each species and catch specific parameters

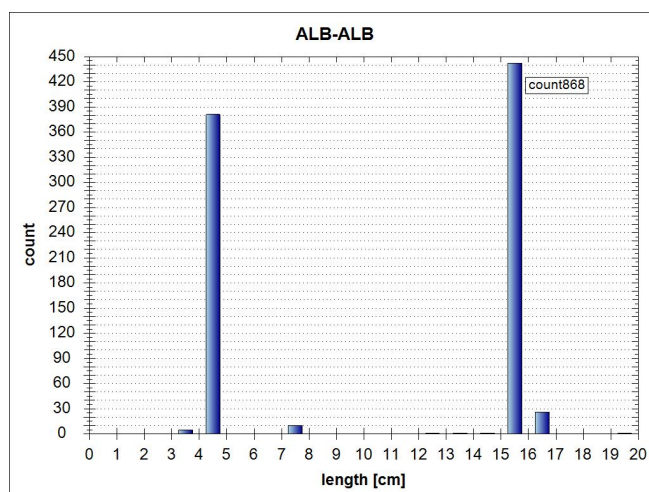
Fish species	Lt [cm]		n	Statist. Method	Catch-Probability [%]	Catch-effectivity		
	Min	Max				Min	MW	Max
Barbel	2.0	6.5	50.0	1,313		1.00	1.00	1.00
Bitterling	2.5	3.4	4.0	5		1.00	1.00	1.00
Bleak	3.0	10.1	19.4	868		1.00	1.00	1.00
Bream	2.4	12.3	50.0	5		1.00	1.00	1.00
Brown trout	15.3	15.3	15.3	1		1.00	1.00	1.00
Burbot	35.0	41.3	54.0	3		1.00	1.00	1.00
Chub	2.0	9.6	50.0	616		1.00	1.00	1.00
Dace	7.5	17.5	35.0	110		1.00	1.00	1.00
Danube bream	3.2	3.3	3.5	2		1.00	1.00	1.00
Eel	25.0	50.2	90.0	69		1.00	1.00	1.00
Greyling	7.5	8.9	15.0	16		1.00	1.00	1.00
Gudgeon	15.0	15.0	15.0	3		1.00	1.00	1.00
Ide	15.0	17.2	21.5	3		1.00	1.00	1.00
Nase	2.5	29.2	51.0	47		1.00	1.00	1.00
Perch	4.0	13.4	35.0	261		1.00	1.00	1.00
Pike	35.0	51.7	70.0	3		1.00	1.00	1.00

Fish species	Lt [cm]		n	Statist.	Catch-	Catch-effectivity		
	Min	Max		Method	Probability [%]	Min	MW	Max
Prussian carp	15.0	20.0	25.0	10		1.00	1.00	1.00
Pumkinseed	7.5	7.5	7.5	3		1.00	1.00	1.00
Rainbow trout	35.0	35.0	35.0	1		1.00	1.00	1.00
Roach	3.0	15.0	25.0	125		1.00	1.00	1.00
Round goby	2.5	8.8	15.0	14,347		1.00	1.00	1.00
Spirlin	4.0	4.0	4.1	156		1.00	1.00	1.00
Stone loach	7.5	7.5	7.5	2		1.00	1.00	1.00
Streber	7.5	13.6	15.0	20		1.00	1.00	1.00
Tench	25.0	25.0	25.0	1		1.00	1.00	1.00
Tubenose goby	4.0	5.3	6.7	2		1.00	1.00	1.00
Vimba bream	2.1	8.0	45.0	73		1.00	1.00	1.00
Wels catfish	25.0	48.1	80.0	10		1.00	1.00	1.00
White-finned gudgeon	7.5	7.5	7.5	2		1.00	1.00	1.00
29 species		Sum	18,077					

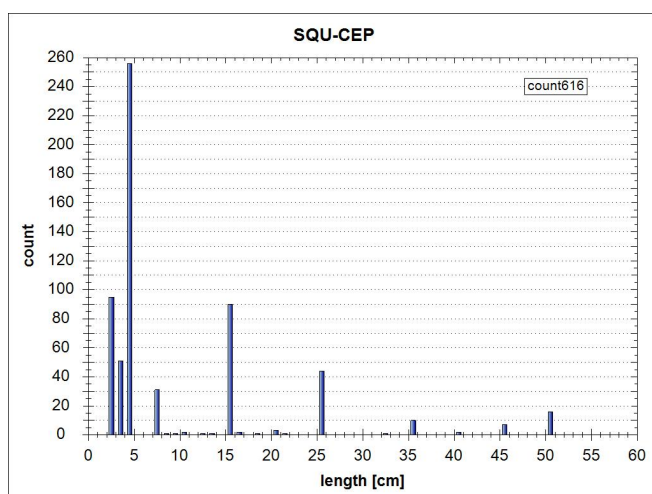
### Population structure of dominant species and subdominant species (total catch)



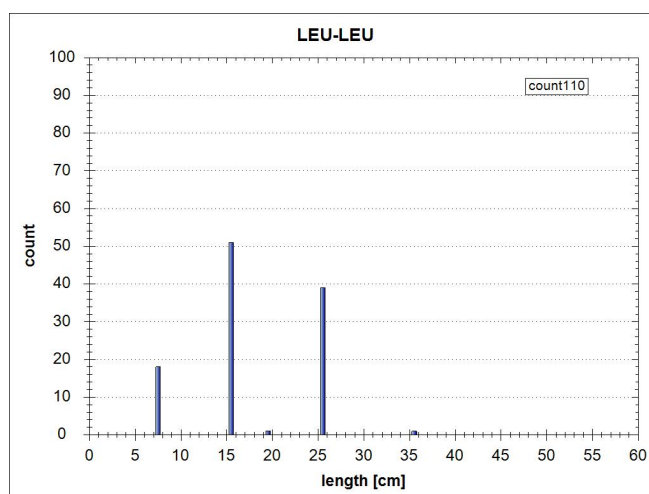
Barbel (*Barbus barbus*), 1



Bleak (*Alburnus alburnus*), 1

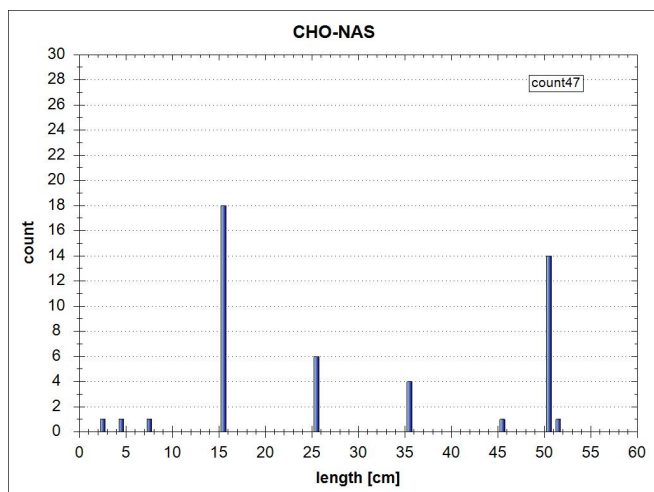
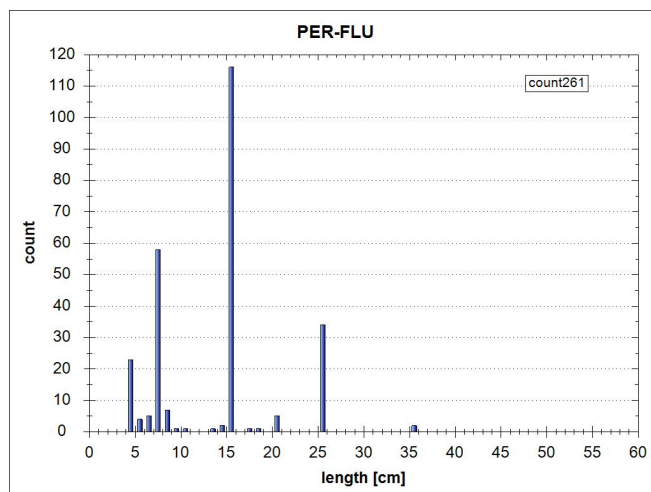
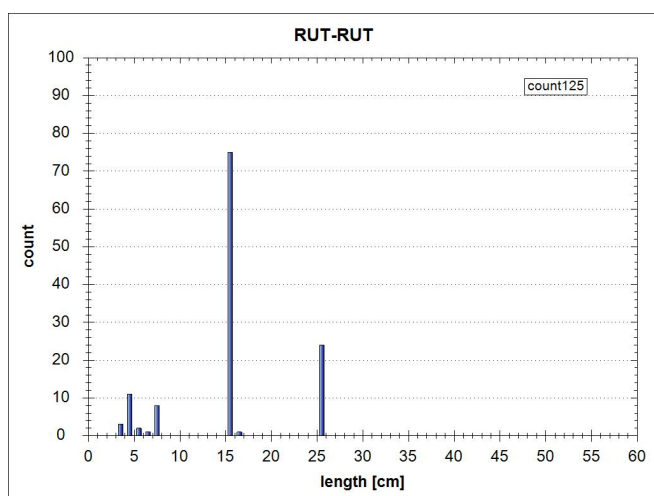


Chub (*Squalius cephalus*), 1

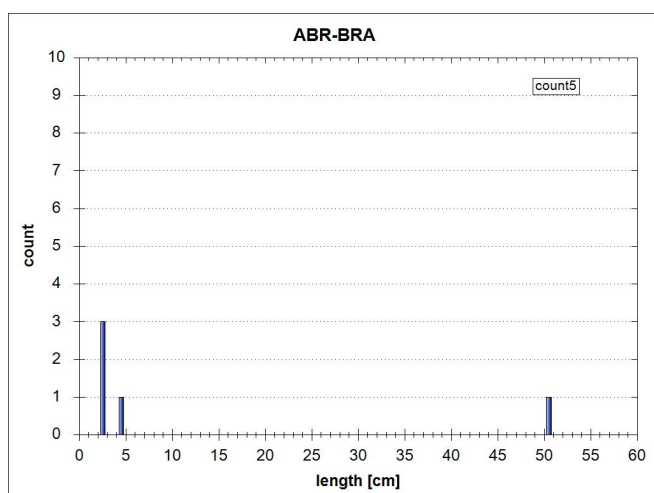
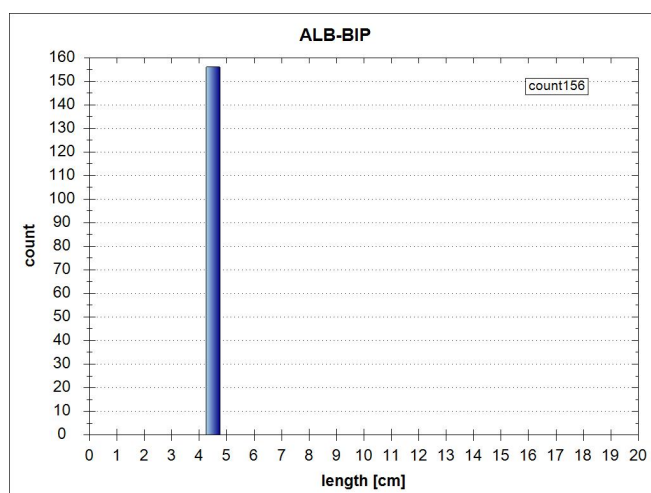


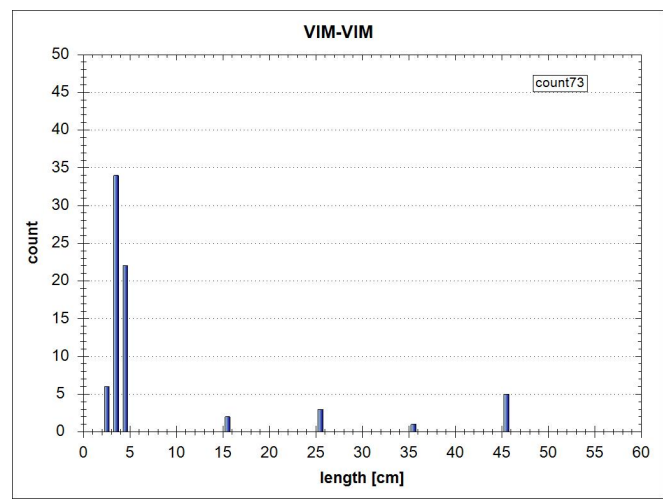
Dace (*Leuciscus leuciscus*), 2



Nase (*Chondrostoma nasus*), 2Perch (*Perca fluviatilis*), 1Roach (*Rutilus rutilus*), 2

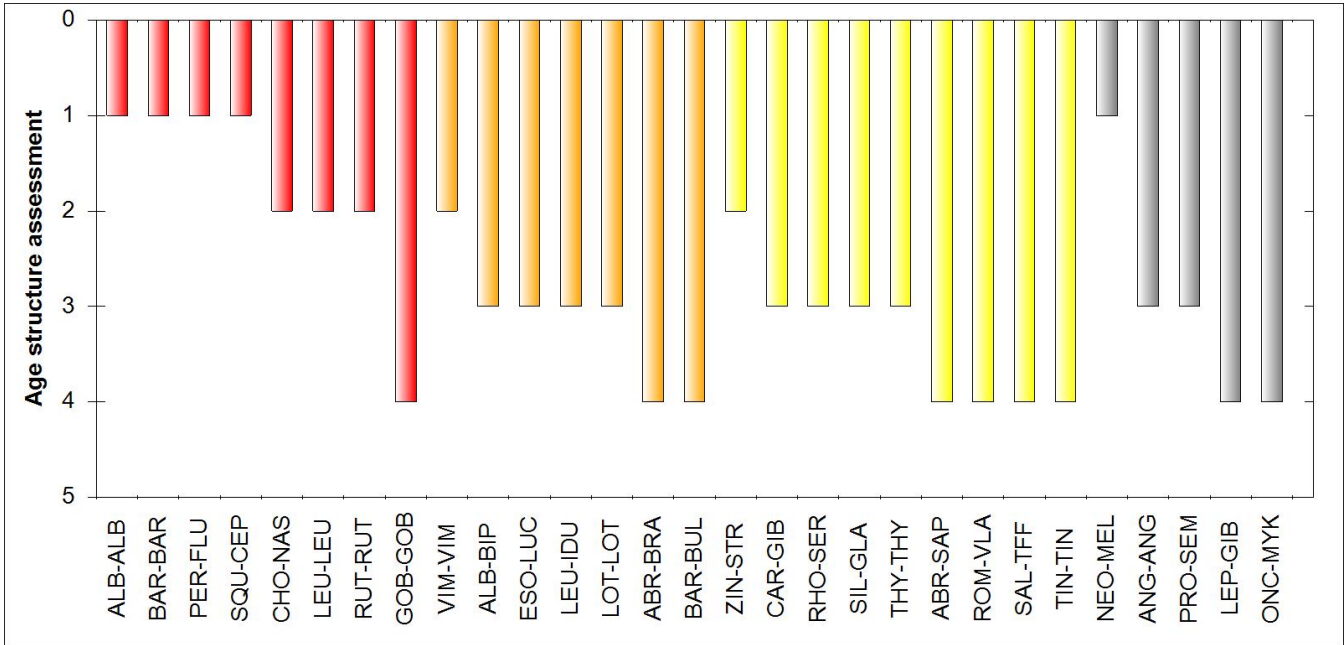
Pic. 5: Length-frequency diagram of dominant species (n&gt;3), Aug. 2013

Bream (*Abramis brama*), 4Spirlin (*Alburnoides bipunctatus*), 3



Vimba bream (*Vimba vimba*), 2

Pic. 6: Length-frequency diagram of subdominant species (n>3), Aug. 2013



Pic. 7: Age structure of present species

**Comment on population structure of dominat and subdominant species**

- no comment -

**Fish ecological assessment (FIA, FISH INDEX AUSTRIA)**

Table 7: fish ecologic assessment, Danube, Kelheim, DE\_JDS02, 8/14/2013

Rating					
Stock data	Abundance Ind/ha	Biomass kg/ha			ko-criterion biomass
	4,674.1	111.6			OK
<b>1. Species</b>	<b>Reference fish assemblage</b>	<b>actual (current)</b>	<b>Ratio/Deviation</b>	<b>Partial rating</b>	
<b>Species</b>					
Dominant species	8	8	100%	1.0	
Subdominant species	14	7	50%	2.0	
Rare species	20	9	45%	2.0	
				1.7	
<b>Ecological guilds</b>					
Flow	5	5	0	1.0	
Reproduction	7	6	1	2.0	
				1.5	
<b>Species diversity &amp; guilds overall</b>					<b>1.4</b>
<b>2. Dominance</b>	<b>Reference fish assemblage</b>	<b>actual (current)</b>	<b>Difference</b>		
<b>Fish region index</b>	6.1	6.6	0.5		<b>2.0</b>
<b>3. Population structure</b>	<b>Reference fish assemblage</b>	<b>actual (current)</b>		<b>Partial rating (1-5)</b>	
Dominant species	8	8		1.8	
Subdominant species	14	7		4.1	
					<b>2.5</b>
Fishindex Austria without active ko-criterion					<b>2.08</b>
<b>Biological quality element fish</b>		<b>FIA 2.08</b>	<b>Class 2</b>	<b>Good</b>	

Date of Assessment:2/27/2014

Comment BAW-IGF

- no comment -

## **Discussion of fish ecological assessment, plausibility, deficits and measures (AN)**

*Recommended improvements with priority ranking if possible;*