RESEARCHES ABOUT TANSA – BELCESTI LAKE'S IHTIOFAUNA

BY

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Ihtiological researches for Tansa – Belcesti Lake, were 15 - 17 October 2003. The biological material collection made by fishing with fish net and seines. Were been detected 14 species from 4 families (Cyprinidae, Percidae, Cobitidae, Centrarchidae).

The ecological characteristics of present ihtiocenosis in lake have been showed using ecological indexes: numerical and gravimetrical stock, percentage rapport for exemplars number by species, some parameters for dimensional structure of populations.

Introduction

Tansa – Belcesti Lake situated in Moldavian bent, on the Bahlui River's course nascent as result of embanking in 1977 and it has a surface of 44 ha, with a lengthiness of 7km. The studies about lake's ihtiofauna are integral part from CNCSIS grant (code 637/2003) with title "The ihtiofauna from Bahlui River's hydrographic basin and parasitofauna".

The aim of investigations

The aim of investigations was to establish the ihtiofauna for Tansa – Belcesti Lake in 2003, with the proposal for the next years to continue the research for a prospective monitoring of lake.

Material and methods

For intiological material collection, was used the drag net with the aperture of network by 60mm.

From collected material had been extracted statistical representative samples, which ones have been biometrical and gravimetrical measured. After this, were calculated some specifically ecological indexes (numerical and gravimetrical stock, percentage rapport for exemplars number by species, dimensional structure of populations from rapports F/C, Y/C and parameters A_T , A_F , S_F .

Dimensional structure adverting to the balance and importance of diverse species with different lengthiness and weightiness, appreciate the rapport between

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carnivorous species (C) and plant feeder (F), the assurance with booty fish (Y) for predatory and finally, the economical importance for industrial fishing of ihtiocenosys by percent of big individuals, with economical value from the entire intiocenosys. It is possible to appreciate in this way, the grade of equilibrium or disequilibrium of ihtiocenosys, in function of quantitative rapport between ecological groups of fishes (wolfish, unwolfish, prey and predators).

Dimensional used classes were small individuals (S), without taking count of species and which represent the food for predators and to small dimensions for be counted like economical interest, big individuals (A) which present economical interest.

Other classification was in function of diet:

- unrapacious individuals (F) plant feeders, plankton feeders;
- rapacious individuals (C) from carnivorous species;
- prey individuals (Y) including spawn which constituted the food for rapacious species.

Equilibrium state for one ihtiocenosys that it is possible to be established using some parameters:

- the rapport F/C the rapport between uncarnivorous and carnivorous species;
- the rapport Y/C express the quantity of prey fish available like food for a weight unit of fishes from C category;
- the parameter A_T represent the percent of fishing fishes from the basin fishes total biomass;
- the parameters A and C represent the quantitative abundance of weight category (A, I, S) from the total association, taking count of all individuals from trophic category F (Godeanu S., 1997).

Results and discussions

Taxonomical structure – have been collected 14 species from 4 families (*Cyprinidae*, *Percidae*, *Cobitidae*, *Centrarchidae*), hence 10 native species and 4 introduced (table 1).

Table 1 Taxonomical structure of fishes	populations from Tansa – Belcești Lake.
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		Ecological statement			
No	Scientific name	Native	Introduced		
		species	species		
1.	Hypophthalmichthys molitrix Valenciennes, 1844		*		
2.	Aristichthys nobilis Richardson, 1845		*		
3.	Alburnus alburnus alburnus L., 1758	*			
4.	Orthrias barbatulus L., 1758	*			
5.	Pseudorasbora parva Schlegel, 1842		*		
6.	Carassius auratus gibelio Bloch, 1782	*			

No		Ecological statement		
	Scientific name	Native species	Introduced species	
7.	Perca fluviatilis fluviatilis L., 1758	*		
8.	Gymnocephalus cernuus L., 1758	*		
9.	Rhodeus sericeus Bloch, 1782	*		
10.	Stizostedion lucioperca L., 1758	*		
11.	Scardinius erythrophthalmus L., 1758	*		
12.	Lepomis gibbosus L., 1758		*	
13.	Cyprinus carpio carpio L., 1758	*		
14.	Abramis brama Pavlov,1956	*		

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Numeric and gravimetric stock – we can observe dominance of higher economical importance species (*Hypophthalmichthys molitrix*, Aristichthys nobilis, *Cyprinus carpio carpio*) and between rapacious species numeric dominated is *Perca fluviatilis* and gravimetric *Stizostedion lucioperca* (table 2). While the plant feeding remanded species put on populations and the basin using, numerical dominance of *Perca fluviatilis* is because of this species juveniles, which are multitudinous, in direct binding with an abundant zooplankton growth.

Lake							
No.	Species	Numeric stock (ex/100m ²)	Gravimetric stock (g/100m ²)				
1.	silver carp	7.41	12365.5				
2.	bighead carp	1.80	3382.2				
3.	bleak	4.22	634				
4.	stone loach	0.45	6.6				
5.	stone moroko	0.20	1.6				
6.	prussian carp	0.61	183				
7.	common carp	1.24	2604.3				
8.	carp bream	0.12	35.4				
9.	amur bitterling	0.62	6.1				
10.	rudd	0.50	17.5				
11.	pikeperch	1.10	562.3				
12.	pumpkinseed	0.43	6.2				
13.	european perch	1.92	95.3				
14.	ruffe	1.54	23.5				
	Total	22.16	19352.9				

 Table 2 Numeric and gravimetric stock of fish populations from Tansa-Belcești

 Lake

Percentage rapport of individuals' number by species shows a clear dominance of *Aristichthys nobilis* (32%), *Alburnus alburnus alburnus* (9%) and *Cyprinus carpio carpio* (6%) and between rapacious species dominant is *Perca fluviatilis* with 9% (Figure 1.)



Figure 1 Percentage rapports of exemplars number by species in Tansa – Belcesti Lake 1. silver carp, 2. bighead carp, 3. oblate, 4. stone loach, 5. stone moroko, 6. prussian carp, 7. common carp, 8. carp bream, 9. amur bitterling, 10. rudd, 11. şalău, 12. pumpkinseed, 13. european perch, 14. ruffe

Dimensional structure of fish populations

Dimensional structure determination for the entire capture made possible a appreciation about the equilibrium or disequilibrium statement of ihtiocenosys by ensemble.

In table 3 are presented biomass values by dimensional groups and species. The rapport F/C = 27.16 is in domain of unbalanced associations and Y/C = 0.22 in suboptimal domain, which indicate an easier overcharge with rapacious species.

The value for $A_T = 96.9\%$ indicate the same overcharge with rapacious species and the same for the values of $A_F = 92.9\%$ and $S_F = 0.5\%$ (figure 2).

		o. Species	DIMENSIONAL GROUPS									
Diet	No		Biomass		(%)		Juvenile		Adults			
			S	Ι	А	S	Ι	А	J	%	А	%
acious	1.	silver carp	-	-	12365.5	-	-	100	-	-	12365.5	100
	2.	bighead carp	-	-	3382.2	-	-	100	-	-	3382.2	100
	3.	bleak	61.5	1.9	-	97	3	-	20.1	31.7	43.3	68.3
	4.	stone loach	6.6	-	-	100	-	-	6.6	100	-	-
	5.	stone moroko	1.6	-	-	100	-	-	0.5	31.25	1.1	68.75
	6.	prussian carp	12.4	49.6	121	6.78	27.1	66.12	63.2	34.54	119.8	65.46
unraj	7.	common carp	-	-	2604.3	-	-	100	-	-	2604.3	100
	8.	carp bream	-	2	33.4	-	5.65	94.35	-	-	35.4	100
	9.	amur bitterling	6.1	-	-	100	-	-	2.5	40.98	3.6	59.02
	10.	rudd	9	8.5	-	51.43	48.57	-	9	51.43	8.5	48.57
	UNRAPACIOUS		97.2	62	18506.4	0.52	0.33	99.15	101.9	0.55	18563.7	99.45
	11.	şalău	-	112	450.3	-	19.92	80.08	-	-	562.3	100
sn	12.	pumpkinseed	2.2	4	-	35.48	64.52	-	2.2	35.48	4	64.52
pacio	13.	european perch	24.2	16	55.1	25.39	17.8	57.81	24.2	25.39	71.1	74.61
raţ	14.	ruffe	23.5	-	-	100	-	-	8.5	36.17	15	63.83
	RAPACIOUS		49.9	132	505.4	7.26	19.2	73.53	34.9	5.08	652.4	94.92
Total		TOTAL	147.1	194	19011.8	0.76	1.00	98.24	136.8	0.71	19216.1	99.29
F/C	2	F (total)	18665.6 / 687.3 = 27.16									
		C (total)										
Y/C		Y (total)	147.1 / 687.3 = 0.22									
		C (total)										

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Table 3 Dimensional structure for fish populations

 $A_{T} = 96.90\%$

 $A_F = 92.92\%$

 $S_{\rm F} = 0.50\%$

F/C = the rapport between uncarnivorous and carnivorous.

Y/C = the quantity of prey fish available for a weight unit of fishes from C category.

 A_T = percent of fishing fishes from total biomass of fishes from basin.

 A_F = the quantitative abundance of A sizes category from the entire association, taking count all individuals from F trophic category.

 S_F = the quantitative abundance of S sizes category from the entire association, taking count all individuals from F trophic category.

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Figure 2 The diagrams of optimal values domains and deviations from these domains for repports F/C, Y/C, A_T, S_F, and A_F (after Godeanu S., 1997)

Conclusions

The Tansa - Belcesti Lake intiocenosys is constituted from 14 species of fish, which 10 are native and 4 introduced.

Numeric stock in medium is about 22.16 exemplars/ $100m^2$ and gravimetric stock is about 19.350 g/100m². The biomass is constituted in principal from big size species and exemplars with higher economical value.

The percentage rapport of exemplars number by species shows a dominance of silver carp (32%), oblate (19%) and from rapacious species dominant is european perch (9%).

The dimensional structure of populations indicates a higher biomass for adult individuals which constitute, in majority, the dimensional group A.

The rapports F/C, Y/C and the parameters $A_{\rm T},\,A_{\rm F}$ and $S_{\rm F}$ shows an easier overcharge with carnivorous.

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