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MORPHOLOGICAL ANALYSIS OF SOME HYBRID FISHES FORMS FROM LAKE SKADAR[1]

MORFOLOŠKA ANALIZA NEKIH HIBRIDNIH OBLIKA RIBA IZ SKADARSKOG JEZERA

Abstract

During the period from 1971. through 1973. the natural hybrids between the diferent species from the family of Cyprinidae have been collected in Lake Skadar. The analysis of some meristic and morphometric characters, whiich is explained in this study, indicates that the collected specimens are hybrides between *Alburnus alburnus alborella* and *Leuciscus cephalus albus.*

Izvod

U periodu od 1971. do 1973. u Skadarskom jezeru su prikupljani prirodni hibridi među različitim vrstama iz familije Cyprinidae. Analiza nekih merističkih i morfometrijskih karaktera koja je prikazana u ovom radu pokazuje da su prikupljeni primjerci hibridi između *Alburnus alburnus alborella* i *Leuciscus cephalus albus.*

INTRODUCTION

There is no information in the literature about the existance of hybrids between the different fish species from Lake Skadar Ivanović, B. (1967) submits the results of the experimental

[1] This paper was presented on the I Congressus Europaeus inchthyologorum, Sarajevo (21—29. IX 1973).

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hybridization between *Pachychilon pictum* and *Rutilus rubilio* but such natural hybrids have been not jet found in Lake Skadar. Our attention was mainly directed to the species from the family of Cyprinidae, which is represented in Lake Skadar with the large number of species (19). Inspite of such a great number of species, it was not decribed anyone natural hybrid between the species from the family of Cyprinidae. It may be expected that the future study of natural interspecions hybridization of fish hybrid forms which so far have not been recorded in the scientific literature.

MATERIAL AND METHODS

The material has been collected during 1971, 1972. and 1973 from the different localites from lake Skadar near Vranjina. The fish was caught with gill nets with different mesh size. There were caught 11 hybrids in total. The hybrid forms are preserved in 4% formaline for the future investigations. The meristic and morphomeristic characters were determined on the base of common shemes (Vuković, T. and Ivanović, B., 1971).

RESULTS AND DISCURSSION

In this preliminary notification was first description of the hybrids *Alburnus alburnus alborella* X *Leuciscus cephalus albus* from Lake Skadar (table 1 and 2).

Tabela 1.

Neki morfološki karakteri hibrida *Alburnus alburnus alborella* (De Fillippi, 1844) X *Leuciscus cephalus albus* (Bonaparte, 1838) iz Skadarskog jezera

Table 1.

Some morphological charakters of hybrids *Alburnus alburnus alborella* (De Filippi, 1844) X *Leuciscus cephalus albus* (Bonaparte, 1838) from lake Skadar

Mark	Charakters	Amplituda (min.—max.)	M±m(M)	δ
	Body weight, in gr.	271,0—795,0	47,660 ± 5,497	16,492
ab	Total body lenght, in mm.	127,3—190,0	162,120 ± 6,081	18,245
ad	Body lenght without c, in	107,5—163,0	137,110 ± 5,283	15,850
	In % of body lenght without c			
ao/ad	Lenght of head	28,5— 40,7	23,93 ± 0,437	1,313
aq/ad	Anterdorsal distance	59,1— 90,0	54,29 ± 0,592	1,778
rd/ad	Postdorsal distance	39,3— 58,3	36,86 ± 0,412	1,236

Mark	Charakters	Amplituda (min.—max.)	M±m(M)	δ
lm/ad	Depth of head at occiput	18,2— 27,1	15,79 ± 0,307	0,922
gh/ad	Depth of body	23,9— 38,6	22,08 ± 0,530	1,591
ik/ad	Depth of body on caudal penducle	11,1— 15,7	9,57 ± 0,176	0,529
fd/ad	Lenght of the caudal penducle	21,0— 32,0	20,96 ± 0,375	1,123
vz/ad	Distance between the pectoral and ventral fins	30,9— 41,0	25,70 ± 0,351	1,053
zy/ad	Distance between the ventral and anal fins	24,9— 32,2	21,25 ± 0,318	0,954
gs/ad	Lenght of the base of the dorsal fin	10,6— 18,1	10,74 ± 0,229	0,688
tu/ad	Depth of the anterior part of the dorsal fin	15,7— 25,0	15,30 ± 0,344	1,034
yy/ad	Lenght of the bases of the anal fin	10,1— 24,9	12,15 ± 0,619	1,858
ej/ad	Depth of the anal fin	14,0— 19,7	11,65 ± 0,322	0,966
vx/ad	Lenght of the pectoral fin	17,8— 27,9	17,75 ± 0,235	0,706
zz/ad	Lenght of the ventral fin	14,7— 23,0	14,34 ± 0,331	0,995
	In % lenght of head			
np/ao	Diametar of eye	6,0— 7,8	21,15 ± 0,575	1,726
an/ao	Region before eyes	8,3— 10,5	29,08 ± 0,738	2,214
po/ao	Region behind eyes	14,4— 21,6	49,80 ± 0,926	2,780

Tabela 2. Neki meristički karakteri hibrida Alburnus alburnus alborella (De Fillippi, 1844) X Leuciscus cephalus albus (Bonaparte, 1838) iz Skadarskog jezera.

Table 2.

Some meristic charakters of hybrid *Alburnus alburnus alborella* (De Filippi, 1844) X *Leuciscus cephalus albus* (Bonaparte, 1838) from Lake Skadar

Mark	Charakters	Amplitude (min.—max.)	M
SP.BR.	Number of the gill rakers	10—18	12,60
L.L.	Number of scales in the laterl line	46—53	49,37
	Number of scales above lateral line	8	8,00
	Number of scales under lateral line	3	3,00
D	Number of the dorsal rays	III 8	III 8,00
A	Number of the anal rays	III 9—III 14	III 10,50
T.T.	Thront teeth	2.5— 5.2	2.5—5.2

The dorstal fin of hybrids is mainly placed towars to back than that of *Leuciscus cephalus albus*. The vertical of anterior margin of base of dorsal fin is presented remarkable behind the posterior margin of ventral fin. Based on this charakters the hybrids individuals are intermediate between parents species. Behind of base ventral fin apper one subrounded keel, very characteristic

for species of *Alburnus alburnus alborella*. The keel behind base of ventral fin is sometimes less developed.

Some meristic characters of hybrids and their parents are given on table 3.

Table 3.

Mean value of some meristic charakters of *Alburnus alburnus alborella* (De Filippi, 1844), *Leuciscus cephalus albus* (Bonaparte, 1838) and their hybrids

Tabela 3.

Srednja vrijednost nekih merističkih karaktera *Alburnus alburnus alborella* (De Filippi, 1844), *Leuciscus cephalus albus* (Bonaparte, 1838) i njihovih hibrida

Charakters Karakteri	*Alburnus alburnus alborella*	Hybrid	*Leuciscus cephalus albus*
sp.br.	20,30	12,60	10,50
l.l.	50,28	49,37	44,65
Above l.l.	8,75	8,00	7,00
Under l.l.	3,00	3,00	3,00
D	III 7,98	III 8,00	III 8,00
A	III 13,58	III 10,50	III 8,000
Thront teeth	2.5.—5.2	2.5.—5.2	2.5.—5.2

The hybrides differ from parents by the number of branhiospines on the first gill raker (table 1).

Midlle value of barnhiospina of hybrids is 12.60, parents: *Alburnus alborella* 20,30 and *Leuciscus cephalus albus* 10,50. That character of hybrids isalso between both parents species.

The lateral line of hybrides appear always 8 horisontal scales rows by *Alburnus alburnus alborella* average 8.75 and *Leuciscus cephalus albus* 7,0. Under lateral line of hybrids appear stable number of scales like those their parents species.

The lateral line of hybrids possesses usually 49,37 scales, less than those in *Alburnus alburnus alborella* 50,28 and more than those *Leuciscus cephalus albus* 44,65.

The hybrids and parents posses the stable number of the unbarched rays in the dorsal fin while the number of branched rays of *Alburnus alburnus alborella* is something veriable. Very interesting is number of the branched rays in the anal fin of hybrids 10.50, remarkable less than in *Alburnus alburnus alborella* 13,58 but much parents species. The hybrides posses bi-thront teeth like their parents.

There are defferences is position of mouth. In some hybrids (cought in august 1971) the top of mouth is placed in the upper third-way of the eye. In hybrids cought in July 1972. the top of mouth is over of horisontal margin of eye-socket.

Recently a number of interspecious hybrid forms from the family of Cyprinidae from Adriatic drainage basin in Yugoslavia have been described. In most cases the qestion is about the hybrid forms of enedemic species so far unknown in the scientific literature. The following hybrids have been found in the rivers which disapper into the karst ground *(Phoxinus phoxinus* X *Barbus meridonalis petenyi,* Vuković, 1963), *Scardinius erythropthalmus* X *Leuciscus turskyi,* Vuković, T. 1964, *Chodostroma phoxinus* X *Paraphoxinus alepidotus,* Vuković et al 1970), *Scardinius erythrophthalmus* X *Paraphoxinus alepidotus,* Vuković, T. et al 1971) and in the Neretva river *(Scardinius erythrophthalmus* X *Alburnus alburnus* Vuković, T. 1977, *Rutilus rubilio* X *Alburnus alburnus alborella,* Vuković, T. 1968).

The description of the hybrid between *Alburnus alburnus alborella* and *Leuciscus cephalus albus,* menationed in this study, suplemets the list of the known interspecious hybrids forms from the family of Cyprinidae from the waters of the Adriatic drainage basin in Yugoslavia. The large material on natural and artificaial hybridization of fish has been gatheard all over the world (Hubbs, C. L., Schultz, R. J., Nikoljukin, N. I., Schwartz, J. F. and others).

These data have a fundamental scientific importance. For the hybrid indetification, as it is the case in this study, we usually use the morphological methods. However it is felfor the need a more coplex understanding of the hybrids and hybridization in general, what but demands the use of other methods (cytological, phisiological, bicemical etc). Therefore the information given in this paper, about the hybrids between *Alburnus alburnus alborella* and *Leuciscus cephalus albus* should be considered as a preliminary description, the first identification which has to be confirmed and supplemented with new and more complex data.

CONCLUSIONS

The hybrid forms between *Alburnus alburnus alborella* and *Leuciscus cephalus albus* exist in Lake Skadar.

These hybrids are characterized by the specific morphological features which differ them from the both parent species. It are: number of barnhiospina the first gill raker, number of scales in lateral line, number of scales above lateral line, number of the branched rays in the anal fin.

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MORFOLOŠKA ANALIZA NEKIH HIBRIDNIH OBLIKA RIBA IZ SKADARSKOG JEZERA

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Rezime

U Skadarskom jezeru egzistiraju hibridi između *Alburnus alburnus alborella* i *Leuciscus cephalus albus*. Ti hibridi se odlikuju specifičnim morfološkim osobinama po kojima se razlikuju od obje roditeljske vrste, kao što su: broj branhiospina na prvom škržnom luku, broj krljušti u bočnoj liniji, broj krljušti iznad bočne linije, broj granatih zrakova u analnom peraju.