

***Chalcalburnus sellal* (Heckel)**

Year	Sex	Age	Weight (g)	Length (mm)	Standard Error	Significance
2005	♂	106	11.64	106	0.74	**
	♀	103	5.45	103	1.06-0.54	*
2004	♂	106	11.64	106	0.74	**
	♀	103	5.45	103	1.06-0.54	*
Diet (Omnivores)						
2005			72.58%	39.02%		
2004			34.43%	41.74%		
Sex Ratio						
2005	♂/♀		62.9%	39.52%	18.43%	
2004	♂/♀		62.9%	39.52%	18.43%	

(1984,)

(1978 Bagenal ; 1956 Lagler)

(1956 Lagler ; 1953 Pillay)

2011 / 2 / 1
2011 / 4 / 25

**

. (1981 Al-Hakim)

.(1956 Lagler)

%1.84

%1.69

(2004)

(2006)

(1998)

(30×30)			207-49			76
(40×40)	4	50	4	100	(80×80)	(70×70) (45×45)
	2005	2004		"		
(1)	"	°35 25	°34 40	"	°45 30	°44 30
2239	165					2
)					.(2001	; 1984

(1950) Hynes	, 40	10	3.8			
	(Frequency of Occurrence)					(Points)
	1/4	1/2	3/4	"		
				0	5	10 15 20

.(1980) Prescott (1959) Edmondson
(1977)Gordan

$$100 \times \frac{\text{Frequency of Occurrence}}{\text{Total}} = \%$$

$$\frac{\text{Frequency of Occurrence}}{\text{Total}} = (\quad / \quad)$$

(1951 LeCren)

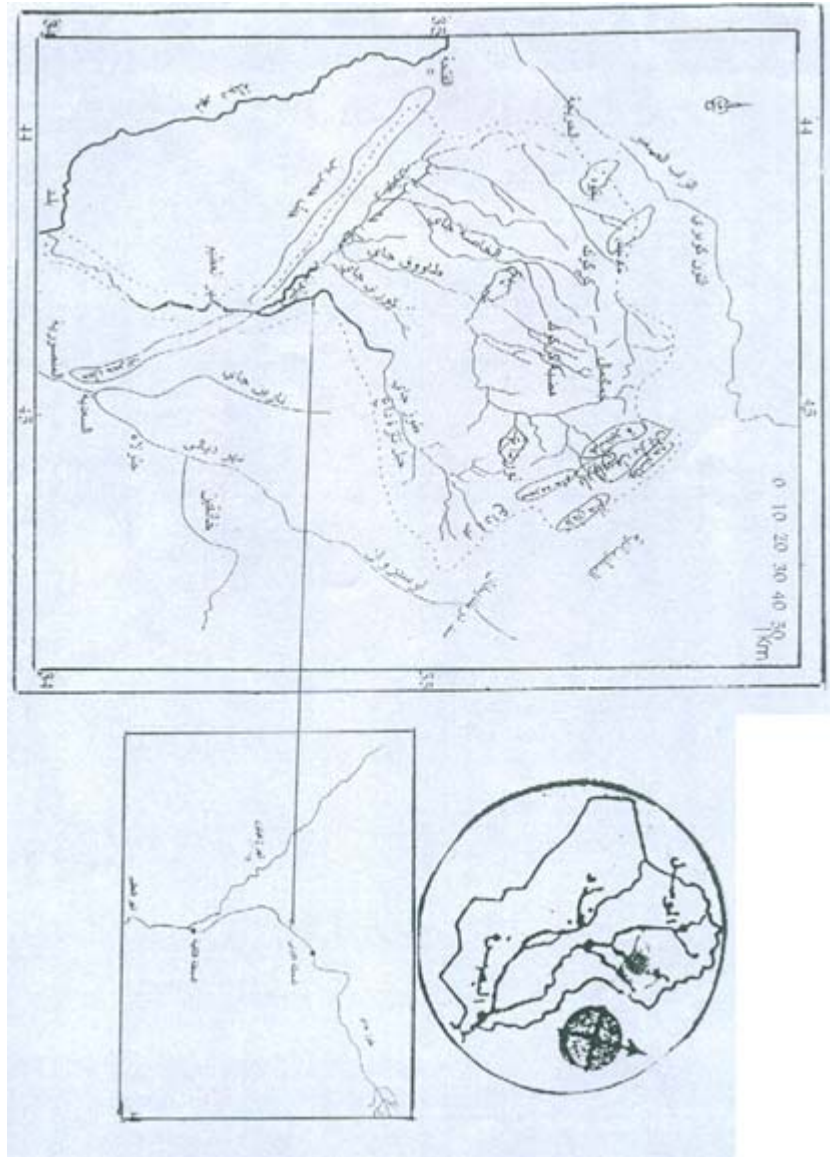
$$\text{Log } W = \text{Log } a + b \text{ Log } L$$

$= L^b, (a)$
= W

(Condition factor)

$$K = \frac{W \times 10^5}{L^3}$$

= L = W



.1

(Relative condition factor)

. (1969 Carlander)

$$Kn = \frac{W}{W^{\wedge}} = W^{\wedge} , = W$$

(GSI) Gonado somatic index

:(1944 Carbine)

$$100 \times \frac{()}{()} =$$

one-way ANOVA

0.05 Student -t test

0.05 F

X²

.(1990)1:1

1:1 :

35 35

70
(1956)Smith

(1)

.(1963 Nikolsky)

(1998)

1.4 : 1 1.1 : 1 :

: 1

(149-130)

(129-110)

0.88 :1 0.50

1

(209-190)

(169-150)

(1963 Nikolsky)

1.33 : 1 1.27:

(1)

%.62.9

%39.52

(1998)

%34.43

(1998) .%72.58

(1977 Eder and Carlson)

.(1963 Nikolsky ; 1950 Hynes)

%18.43

.%87.32

/ 12.02

.1

0.47	0.70	0.81	0.82	0.94	3.89	18.43	34.43	39.52	
4.84	11.29	4.84	14.52	4.84	27.42	80.65	72.58	62.90	
									62
									7
									12.02
									(/)
									87.32
									%

%39.02

%41.74

(1998)

(2)

2000

2004

%80

%4

2005

%100

2005

2004

%80 %40 %61.95 %38.24 %60 %55.56

%80

2004

%44.44

%5.2

%2.44 %2.2

2005

%1.95

% 75

%14

(% P)

2005

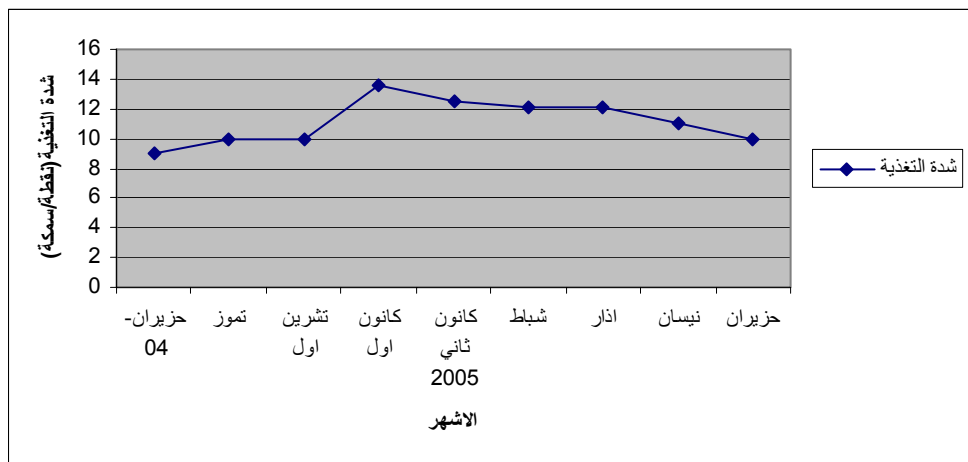
2004

.2

. (% F)

/)				()									
	F %	P %	F %	P %	F %	P %	F %	P %	F %	P %	F %	P %	F %	P %	F %	P %
9													80.00	44.44	100.00	55.56
10					100.00	88.00							100.00	5.2	100.00	6.80
10													100.00	40.00	100.00	60.00
13.53	6.67	2.44			100.00	77.51	6.67	0.10	40.00	3.17	6.67	0.15	60.00	11.61	33.33	5.02
12.5					100.00	62.00			75.00	14.00			100.00	20.00	25.00	4.00
12.14					85.71	26.47			42.86	13.53			100.00	21.76	85.71	38.24
12.06	11.76	0.49	17.65	1.71	35.29	11.46	35.29	2.44	17.65	1.95	29.41	2.20	94.12	17.80	100.00	61.95
11					60.00	33.18			50.00	6.36			80.00	20.45	70.00	40.00
10													100.00	20.00	100.00	80.00

(2) (2)
 (1989) -0.78
) (2000)
 (13.53
 . 2004 / 9 /
 (1998)
 / 8.46 / 18.63



.2

209-130 130 0.0 5 F
 (3)
 %34.4
 %41.99 %39.22 %26.36 %39.36
 %17.02
 (1957)Alikunhi
 %25.2
 %75 %36.61 %60

%1.6 %9.2
 %0.81 %1.77
 % 0.97 %0.84
 %39.44 % 37.52
 %0.77
 %0.24
 / 11.92 12.5
 (2004)

.3

209-130		130		()
75.00	36.61	60.00	25.20	
78.85	17.02	100.00	26.24	
21.15	1.77	---	---	
15.38	1.77	30.00	9.20	
3.85	0.81	10.00	1.60	
13.46	0.84	---	---	
22.86	39.44	59.62	37.52	
11.43	0.77	9.62	0.24	
5.77	0.97	---	----	
11.92		12.50		(/)

(4)

(1998) 11.64 5.45
 10.2155 4.3671
 (1998)

(1963) Nikolsky

106"

103

"

106

(1998)

107 "

(5)

3.522

b

(GSI)

.4

SD±	GSI		SD±	GSI		
4.70	3.73	3	0.45	0.90	6	
----	2.36	1	---	0.86	1	
---	---	---	-----	----	---	
---	--	--	---	---	---	
----	----	---	----	0.18	1	
----	-----	---	-----	----	---	
0.77	1.54	6	0.71	0.64	8	
--	3.42	1	----	----	---	
0.91	3.53	2	0.04	1.40	2	
4.87	10.64	8	1.15	5.45	7	
4.07	11.64	6	0.91	2.12	4	
----	-----	---	----	----	---	
---	0.39	1	----	----	---	

(1969)Carlander

.3.2423

b (1998)

3

" 3.5-2.5

b

3.229

3.030

b

3 b

()

.(1970 Tesch)

"

b

.(1942 Kesteven)

1.06 – 0.54

0.08_+0.74

154.10

209-30

"

() () .5

			()	()		
r	b	Log a	()	()		
0.989	3.030	-4.976	32.03	15.89	35	
0.962	3.229	-5.523	46.31	16.51	34	
0.957	3.522	- 6.368	31.55	15.41	7	"

(6)

0.93 2005 0.54

.6

0.03	0.79	9	
0.11	0.85	2	
---	---	---	
----	---	---	
0.09	0.75	2	
---	---	---	
0.09	0.71	18	
0.12	0.68	4	
0.11	0.93	7	
0.08	0.79	21	
0.08	0.69	12	
----	----	---	
----	0.54	1	

(7)

-30

0.83

109-90

0.57

49

209-190

0.84

.(1975 Ricker)

0.11±1.00

1.15-0.76

31.55

154.1

.(2001) Wahab (1998)

(8)

89-30

(1998)

209-170

.7

		()	()		()
---	0.83	0.98	49	1	49-30
0.18	0.72	1.22	55	3	69-50
0.10	0.74	3.23	76	2	89-70
---	0.57	6.93	107	1	109-90
0.13	0.73	13.84	123.67	3	129-110
0.10	0.74	21.74	143	15	149-130
0.08	0.72	28.69	157.64	25	169-150
0.09	0.79	46.14	179.63	19	189-170
0.10	0.84	65.49	199.67	6	209-190
0.08± 0.74					
1.06-0.54					

()

()

.8

.(Kn)

Kn		()	()	()		()
1.15	0.13	0.85	0.98	49.00	1	49-30
1.01	0.01	1.21	1.22	55.00	3	69-50
1.00	0.01	3.22	3.23	76.00	2	89-70
0.76	-2.15	9.08	6.93	107.00	1	109-90
0.98	-0.25	14.09	13.84	123.67	3	129-110
0.99	-0.12	21.86	21.74	143.00	15	149-130
0.98	-0.66	29.35	28.69	157.64	25	169-150
1.06	2.53	43.61	46.14	179.63	19	189-170
1.10	5.80	59.69	65.49	199.17	6	209-190

<i>Liza</i>	<i>Aphanius dispar</i>	.1978.
-		<i>Alburnus mossulensis abu</i>
		147
		.1984.
		220
-		.2001.
	.417-405	27
<i>Cyprinus</i>		.1989.
		<i>carpio</i>
		115
		.1990.
		545
	:(Cyprinidae)	.1998.
<i>Chalcalburnus sellal</i>	<i>Acanthobrama marimid</i>	(Heckel,1843)
		(Heckel,1843)
		60
		.2000.
<i>Cyprinion</i>	<i>Cyprinion macrostomus</i>	(Heckel,1843)
		<i>kais</i> (Heckel,1843)
		103
		.2004.
	147	
		.1984.
		229
-		.2006.
	178	

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SOME BIOLOGICAL ASPECTS OF *Chalcalburnus sellal*(Heckel) IN TUZ CHI RIVER – NORTH IRAQ .

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Animal Production Department- Collage of Agriculture - University of Baghdad.***Animal Resources Science Department- Collage of Agriculture- University of Tikrit.****ABSTRACT**

This work was conducted in Tuz Chi River which is one of Al-Audaim river tributary, Salah – Alddin Province during the period between June 2004 to June 2005. The study includes some biological aspects of *Chalcalburnus sellal* (Heckel), (sex ratio, food, growth and reproduction). Sex ratio (male: female) was 1:1. Insect was found the main food item 39.52 % of the food content with 62.90% frequency, followed by plants particles and their seeds 34.43% with 72.58 % frequency and organic matter 18.43 % . Fish was found omnivores, tends to animal food more than plant food, animal food occupied 41.74% and plant food 39.02% . Significant differences in the food intake between months and different length groups were observed. The maximum gonada somatic index(GSI) was 5.45 for male and 11.64 for female in April. The length of smallest mature male was 103mm and female was 106 mm. The growth was allometric, the growth in weight increased with a rate of more than the cubic length. The condition factor (K) ranged between 0.54 - 1.06 with averaged 0.74, and relative condition factor (Kn) ranged between 0.76-1.15 with averaged 1.00. A significant difference in condition factor between different months was observed.