

Vimba vimba

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(/ / : / / :)

Vimba vimba

$(P \leq /)$

% / % /

% / % /

$(P > /)$

$(P \leq /)$

Vimba vimba :

...

(Abbasi, 2001 Wajdowicz, 1974 Berg, 1949)

Abbasi Berg, 1949 Coad, 1980 Abdoli, 1999)

(Abbasi, 2001 *et al.*, 2004,

(Bagenal, 1978)

(Mann, 1973)

(Copp and Kovac, 1996)

()

(Surre *et al.* 1986)

(*Vimba vimba*)

(Cyprinidae)

%

Abdoli and Naderi, Berg, 1949)

(2008)

(Ghaninejad *et al.*, 2000)

(Back calculation)

(Johal *et al.*, 2001)

$$L_{(t)} = \frac{S_{(t)}}{S} (L - a) + a$$

IUCN

Conservation)

Abdoli and Naderi,)

(Dependent

(2008 , Kiabi, *et al.*, 1999

Ford- Walford (SPSS)
 $S_{(t)} = aL^b$
 $L_{(t)} = S_{(t)} / a$

(Bagenal, 1978)

$$W = aL^b$$

$$\ln W = \ln a + b \ln L$$

(Backiel and Zawisza, 1998)

:L :W
 :b :a

(Backiel and Zawisza, 1998) ()

() Weatherly

$$K = \frac{W * 100}{L^b}$$

L W
 b

Zar,) ANCOVA
 Excel
 SPSS

(1984)

Pauly)

(and Munro, 1984)

$$t = \frac{sd \ln L}{sd \ln W} * \frac{|b-3|}{\sqrt{1-r^2}} * \sqrt{n-2}$$

:Sdlnw :SdlnL

:b :r
 :n
 n-2 t t
 t t

() (P > /)

b

b

t

t

...

			()	()
			±	±
r	a	b		
/	/	/	/ ± /	/ ± /
/	/	/	±	/ ± /
/	/	/	/ ± /	/ ±
/	/	/	/ ± /	/ ± /

t_0 (/)
(/) (/) (/)
(/) (/) (/)
(/) (/) (/)

(t_0)	(K)	(L_{∞})
/	/	/
/	/	/
/	/	/
/	/	/

() ($P \leq /$)

()

/
/
/
/

l	l	l
$(p \leq l)$	$(P \leq l)$	$(P \leq l)$
(\quad)	$(P > l)$	$(P \leq l)$
$(p \leq l)$	$(P > l)$	$(P \leq l)$
$(\quad)(p \leq l)$	l	l
(\quad)	(\quad)	(\quad)
$l \pm l$	$l \pm l$	$l \pm l$
$(l \quad l)$	$(l \quad l)$	(\quad)
$l \pm l$	$l \pm l$	$l \pm l$
(\quad)	$(l \quad l)$	(\quad)

Abbasi *et al.*, 2005 Rahmani, 2000)

(Rahmani and Abdoli, 2008

(2000)Rahmani

(Carlander, 1987; Beamish and McFarlane, 1983)

($p \leq l$)

(Tarkan *et al.*, 2005)

Rahmani, Karimpour *et al.*, 1992)

(Rahmani and Abdoli, 2008 2000

(2000) Rahmani .

...

Abbasi *et al.* (1992) Karimpour *et al.* . (2005)

Rahmani (2000)

Wajdowicz . (1974)

Rahmani (2000) Czarna Orawa

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(Bowen and Avise, 1990)

Tarkan *et al.*,)

.(2005

Rahmani (2000)

.(Weatherly, 1972)

Rahmani (2000)

.(2000) Rahmani .(p≤ /)

Rahmani (2000)

(Nikolskii, 1969)

.(Ricker, 1975)

(2000) Rahmani Wotton (2000)

.(p≤ /) ()

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/	/	/	()	
/	/	/	()	(2000)Rahmani
/	/	/		
/	/	/		
/	/	/		
/	/	/		
/	/	/		

($p > /$)

(Rahmani, 2000)

(Turkmen and Akyurt 2000)

Rahmani

(2000)

± ±

Patimar, 2004 ,Inversen,)

(1996; Potts and Wotton,1990; Nikolsii, 1963,

Hliwa and Mortyniak (2002)

Ostrowiecki

($p \leq /$)

(2000) Rahmani

(2000) Rahmani

($p \leq /$)

(2000) Rahmani

(Unlo and Balci, 1993)

References

- Abbasi, K. 2001. Morphological studies, population structure and natural reproduction *Vimba vimba* in Sefidrud River. M.Sc. thesis. Islamic Azad University, Lahijan Branch. 182p.
- Abbasi, K., Keyvan, A. and Ahmadi, M. R. 2004. A survey of morphometric and meristic characteristics of *Vimba vimba* in Sefidrud River. Iranian Scientific Fisheries Journal. 13(1): 61-76.
- Abbasi, K., Keyvan, A. and Ahmadi, M. R. 2005. Evaluation of natural reproduction and the time and location of spawning of *Vimba vimba* in Sefidrud River. Iranian Scientific Fisheries Journal. 14(3): 113-126.
- Abdoli, A. 1999. The Inland water fishes of Iran. Iranian Museum of Nature and Wildlife, Tehran, 378p.
- Abdoli, A. and Naderi, M. 2008. Biodiversity of fishes of the Southern Basin of the Caspian Sea. Abzian Scientific Publication. 237p.
- Backiel, T. and Zawisza, J., 1988. Variation of fecundity of roach (*Rutilus rutilus*) and perch (*Perca fluviatilis* L.) in the Polish lakes. Polish Archive of Hydrobiology. 35 (2): 205-225.
- Bagenal, T.B., 1978. Methods for assessment of fish production in freshwater. Blackwell Scientific. 365p.
- Beamish, R.J. and McFarlane, G.A., 1983. The forgotten requirement for age validation in fisheries biology. Transactions of the American Fisheries Society (Bethesda). 112: 735-743.
- Berg, L.S., 1949. Freshwater fishes of the U.S.S.R. and adjacent countries. Trudy institute Acad, U.S.S.R. (translated to English in 1962). 2: 469p.
- Bowen, B.W. and Avise, J.C., 1990. Genetic structure of Atlantic and Gulf of Mexico population of sea bass, menhaden, and sturgeon: Influence of zoogeographic factors and life-history pattern. Molecular Biology. 107(3):371-381.
- Carlander, K.D., 1987. A history of scale age and growth studies of North American freshwater fish. P. 3-14. In: R.C. Summerfelt and G.E. Hall (Eds), Age and Growth of Fish. Ames (Iowa).
- Coad, B.W.; 1980. Environmental change and its impact on the freshwater fishes of Iran. Biological Conservation. 10: 51-80.
- Copp, G.H. and V. Kovac. 1996. Ontogenic patterns of relative growth in young roach *Rutilus rutilus*: within- river basin comparisons. Ecography 19: 153-161.
- Ghaninejad, D., Abdolmaleki, S. and Fazli, H. 2000. Evaluation of bony fish stocks in the Caspian Sea in 78-79. Iranian Fisheries Research Organization. 68p.
- Hliwa, P. and Martyniak, A., 2002. The absolute fecundity of *Vimba vimba* (L) from Lake Ostrowieckie (Oder river catchments area, Northwest Poland). Archives of Polish Fisheries 10(2):269-274.
- Inversen, E.S., 1996. Living marine resources (their utilization and management). Chapman and Hall. 403p.
- Johal, M.S., Esmacili, H.R. and Tandon, K.K., 2001. A comparison of back calculated lengths of silver carp derived from bony structures. Journal of Fish Biology 59:1483-1493.
- Karimpour, M. Hosseinpour, N. Haghghi, D. 1992. The *Vimba* of Migrant to Anzali Lagoon. Guilan Fisheries Research Center. 84p.

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- Kiabi, B.H., Abdoli, A. and Naderi, M., 1999. Status of the fish fauna in the south Caspian basin of Iran. *Journal of Zoology in the Middle East* 18: 57-65.
 - Mann, R.H.K., 1973. Observation on the age, growth, reproduction and food of the roach *Rutilus rutilus*(L) in two rivers in southern England *Journal of Fish Biology*, 5:707-736.
 - Nikolski, G.V., 1969. Theory of fish population dynamics as the biological background for rational exploitation and management of fishery resources. Oliver and Boyd, Edimburgo. 323p.
 - Patimar, R. 2004. The diversity within populations and between populations of *Rutilus rutilus caspicus* in the four basin of Golestan Province (Gorganrud River, Gomishan wetland and Ajigol and Aolmagol lakes). Ph.D. thesis of Fisheries, faculty of fisheries and environment. University of Agricultural Sciences and Natural Resources.
 - Pauly, D. and Munro, J.L., 1984. Once more on the comparison of growth in fish and invertebrates. *ICLARM. Fishbyte*.2 (1).
 - Potts, G.W. and Wotton, R.J., 1990. Fish reproduction strategies and tactics. Academic Press Limited. Third printing, 1989. Printed in Great Britain. 410p.
 - Rahmani, H. 2000. Age, growth and reproduction of *Vimba vimba* in Gorganrud River. M.Sc. thesis. Faculty of fisheries and environment. University of Agricultural Sciences and Natural Resources.
 - Rahmani, H. and Abdoli, A. 2008. Morphological variation among populations of *Vimba vimba* in Gorganrud, Shirud and Anzali lagoon. *Journal of Agricultural Sciences and Natural Resources*. 15(1): 28-37.
 - Ricker. W.E., 1975. Computation and Interpretation of Biological Statistics of Fish Population. *Bulletin* 191. 382p.
 - Surre, C., Persat, H. and Gaillard, J.M., 1986. A biometric study of three populations of the European grayling, *Thymallus thymallus* (L.) from the French Jura Mountains. *Canadian Journal of Zoology*. 64: 2430 – 2438.
 - Tarkan, A.S., Gaygusuz, O., Acipinar H. and Gursoy, C., 2005. Characteristics of a Eurasian cyprinid, Shemaya, *Chalcalburnus chalcoides* (Gueldenstadt, 1772), in a mesotrophic water reservoir. *Journal of Zoology in the Middle East* 35:49-60
 - Turkmen, M. and Akyurt, I., 2000. Age and growth of (*Chalcalburnus mossulensis*, Heckel, 1843) living in Karasu River. *Turkish Journal of Biology*. 95-111.
 - Unlo, E. and Balci, K., 1993 Observation on the reproduction of *Leuciscus cephalus orientalis* (Cyprinidae) in Savur stream (Turkey). *Cybium* 17(3): 241-250.
 - Wajdowicz, Z., 1974. Characteristic of the spawning population of the *Vimba vimba* from the River Czarna Orawa. *Acta Hydrobiol.* 16(2): 221-238.
 - Weatherly, A.H., 1972. Growth and Ecology of Fish Populations: Academic Press. P.293. London.
 - Wotton, R.J. 1992. Fish Ecology. Printed in Great Britain by Thomson Litho Ltd. Scotland.P.203.
 - Zar, J.H., 1984. Biostatistical analysis, 2nd eds. Englewood Cliffs, New Jersey: Prentice- Hall 663 pp.

A survey of Biological characteristics of *Vimba vimba* in Gorganrud River and coastal waters of the Caspian Sea in Mahmoudabad

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Abstract

In this study, some of biological parameters of *Vimba vimba* from February 2009 to June 2010 were examined. In total, 281 fish samples were caught by gill- net. In two regions had of five age groups that, the most frequent age groups were related to 2⁺. Sex ratio of male to female were in Gorganrud population 67% ♂ to 33% ♀ and in Mahmoudabad population 57% ♂ to 43% ♀ ($p \leq 0.05$). There was no significant differences ($p > 0.05$) between the average length and weight of the two populations,. Growth pattern for populations of Gorganrud and Mahmoudabad were negative allometric and isometric, respectively. Within the two populations, the asymptotic length (L_{∞}) in males was higher than females, but the growth rates (K) in females were relatively higher. Mean absolute fecundity in Gorganrud and Mahmoudabad populations were $11970.8 \pm 8381/03$ and 6728.49 ± 2488.5 eggs per fish, respectively. There was significant difference between the two populations ($p \leq 0.05$) in mean absolute fecundity, average egg diameter and condition factor. The results showed that, in many biological parameters, there were significant differences between the two populations due to environmental differences in two regions.

Keywords: *Vimba vimba*- Biology- Gorganrud- Mahmoudabad

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