
Clupeonella

()

caspia (Svetovidov, 1941)

(/ / : // :)

Clupeonella caspia

($L_{\infty}=128.7\text{mm}$, $k=0.41\text{yr}^{-1}$, $t_0=-0.59\text{yr}$)

($R^2=0.918$) $W = 0.000001 FL^{2.92}$

GSI

/ yr^{-1}

/ : :

/ yr^{-1} / yr^{-1}

Clupeonella caspia :

...

(Fazli *et al.*, 2007; Parafkandeh

Haghighi, 2009)

(Karimzadeh, 2011)

(Pourgholam *et*

al., 1996)

(*C. (Clupeonella caspia*, Svetovidov, 1941)

(*C. engrauliformis*, Borodin, 1904)

(Kazanchev, *grimmi*, Kessler, 1877)

.1981; Berg, 1948)

M.

leidy

(Melinkov, 2000)

(Fazli, 1990; Aseinova,

1992; Razavi Sayyad, 1993; Pourgholam *et al.*,

1996)

(Mamedov, 2006; Shariati, 1994)

(Fazli *et al.*, 2007;

Mnemiopsis

.Karimzadeh *et al.*, 2010)

(Ivanov *et al.*,

leidy

2000)

(Fazli *et al.*, 2004;

.Aliasghari, 2009)

(Berg, 1948)

(Besharat

and Khatib, 1993; Razavi Sayyad, 1993)

(Pourgholam *et al.*, 1996; Fazli *et al.*,

(Karimzadeh *et al.*, 2010

2002)

Fatemi *et al.*, 2009; Parafkandeh Haghighi, 2009;

Fazli *et al.*, 2002, 2004, 2005, 2007; Sayyad

Bourani, 1997)

mm

g

(Zhang and $E = \frac{F}{F+M}$.

.Sullivan, 1988)

Microsoft Office Excel 2003 SPSS 10.0

chi-square

FISAT

% /

% /

()

/ ± / mm / ± / g

R²=0.918

$$W = 0.000001FL^{2.92}$$

/ b ()

(b<3)

t
(p<0.05)

(L_∞=128.7mm,

k=0.41yr⁻¹, t₀=-0.59yr)

() $L_t = 128.7[1 - \exp^{-0.41(t+0.59)}]$

()

(Campana

.and Neilson, 1985; Francis and Campana, 2004)

$$W = aL^b$$

a (mm)

L (g)

W

(Bagenal,

b

t

.1978)

$$t=(b-3)/Sb$$

b

Sb

b (Morey *et al.*, 2003)

L_t

t

$$L_t = L_{\infty}[1 - \exp^{-k(t-t_0)}]$$

L_∞

t₀

k

(Pauly, 1984)

()

$$GSI = \frac{w}{W} \times 100$$

GSI (Biswas, 1993)

(g)

W

(g)

w

(S)

(Bagenal, 1978)

(Ricker, 1975)

$$Z = -\ln S$$

(Z)

(M)

(Pauly, 1999)

$$\log(M) = -0.0066 - 0.279 \log(L_{\infty})$$

$$+ 0.6543 \log(K) + 0.4634 \log(T)$$

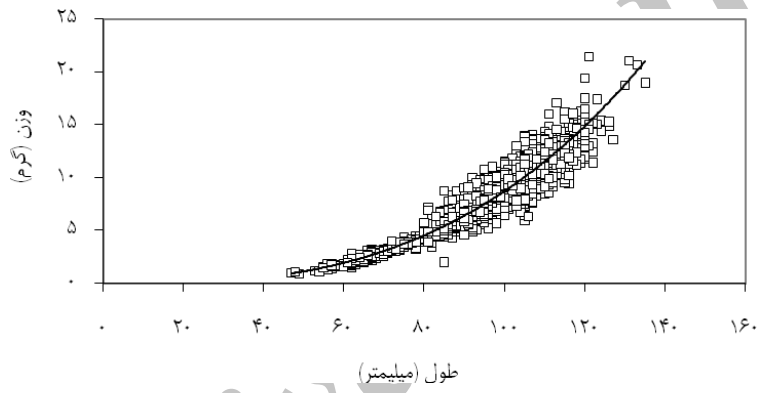
T

(Prakarn, 2002)

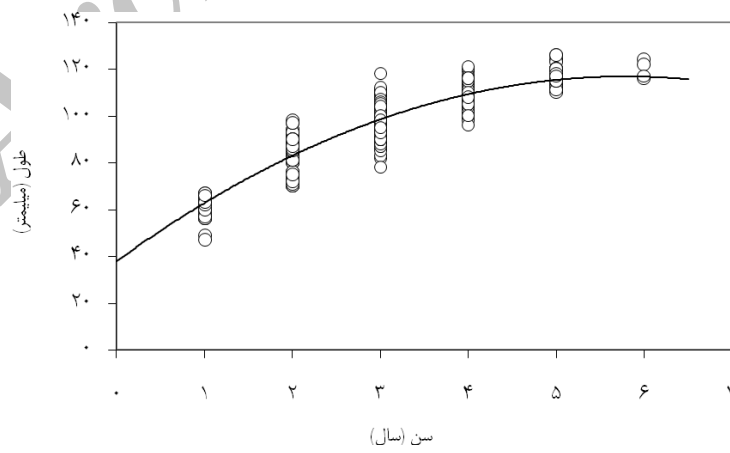
F=Z-M

(F)

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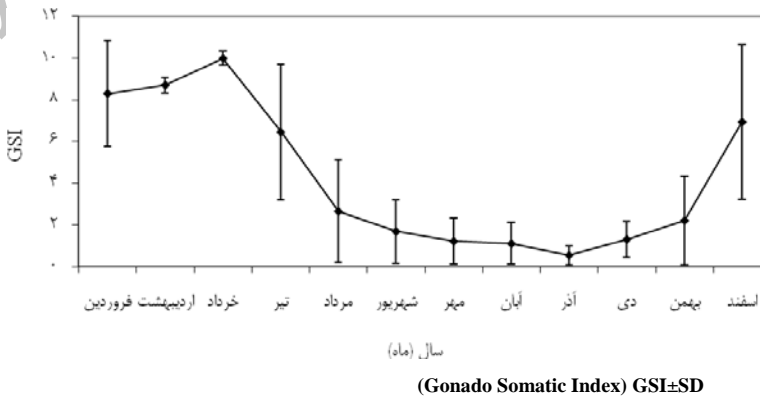
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GSI .()
() / ± /
/ yr⁻¹
/ yr⁻¹
/ yr⁻¹ / yr⁻¹
/

(N=)			()
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b

(Fazli *et al.*, 2007) /
(Karimzadeh *et al.*, 2010) /

b

(Salmanov, 1999; Ivanov, 2000)
(Bagheri *et al.*, 2005, 2008; *Mnemiopsis leidyi*
Roohi *et al.*, 2008)
(b<3)
(p<0.05) t
(Vinogradov *et al.*, 1998;
Volovik, 2000; Kuliyeu, 2004)
(Karimzadeh, 2011)

$t_0 = -0.59 \text{ yr}$ $k = 0.41 \text{ yr}^{-1}$ $L_\infty = 128.7 \text{ mm}$

L_∞ /
(Fazli, 2007)
(k) (Fazli *et al.*, 2007)
/ yr^{-1} / (Fazli, 2007) (2007)
(Janbaz (Fazli, 2007) (Karimzadeh *et al.*, 2010)
(Karimzadeh *et al.* and Abdolmaleki, 2008) /
/ yr^{-1} / yr^{-1} / yr^{-1} / yr^{-1} /
(Fazli *et al.*, 2007)
(Jones, 1981) (Karimzadeh *et al.*, 2010) /
 L_∞ /

(Stevensen and Campana,

.1992)

() ()

(Ben-Yami, 1976)

(Maeda,

.1951)

(Fazli *et al.*,

.2007)

(Karimzadeh *et al.*, 2010)

(Ben-Yami, 1976)

(Wootton, 1990)

(Prikhodko,

.1981)

(Razavi Sayyad, 1993)

(Pourgholam *et al.*, 1996)

(Prikhodko, 1981)

(Abtahi *et al.*, 2002)

(Fazli *et al.*, 2005)

(Karimzadeh *et al.*, 2010)

(Fazli *et al.*,

.2007)

(Karimzadeh

: /
et al., 2010)

(Beverton and Holt, 1959)

$\frac{1}{\text{yr}^{-1}}$

(Kideys *et al.*, 2005; $\frac{1}{\text{yr}^{-1}}$)

M. leidyi (Kideys and Moghim, 2003) - $\frac{1}{\text{yr}^{-1}}$

(Kideys *et al.*, 2001) (Fazli *et al.*, 2007)

$\frac{1}{\text{yr}^{-1}}$

(Rouhi, 2003) (Karimzadeh, 2011) $\frac{1}{\text{yr}^{-1}}$

(Roshantabari *et al.*, 2003; Mirzajani *et al.*, 2005) $\frac{1}{\text{yr}^{-1}}$ $\frac{1}{\text{yr}^{-1}}$

()

(Fazli *et al.*, 2005)

(Janbaz *et al.*, 2010)

(Fazli *et al.*, 2007; Karimzadeh *et al.*, 2010)

(Parafkandeh, 2009) $\frac{1}{\text{yr}^{-1}}$

(Gulland, 1983) ($E \approx \dots$)

(Fazli *et al.*, 2007)

(Karimzadeh *et al.*, 2010)

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Investigation of Some of the Growth and Reproductive Parameters of Common Kilka *Clupeonella caspia* (Svetovidov, 1941) in Southern Caspian Sea (Mazandaran Zone)

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Abstract

The present research aimed to study the growth and reproductive parameters of common Kilka *Clupeonella caspia* in southern Caspian Sea in 2010. After measuring the length and weight of 3774 samples, they were dissected, sex determined and female gonads were weighed. Sexual maturity classification was carried out based on six stages. Age was determined using sagitta otoliths. Length-weight relationship was $w = 0.000001FL^{2.92}$ ($R^2=0.918$). Growth parameters were ($L_{\infty}=128.7\text{mm}$, $k=0.41\text{yr}^{-1}$, $t_0=-0.59\text{yr}$). Age composition was constituted of 6 age groups, including 1-6 years. Age average was 3.27 ± 0.09 years. 3 years old fish were the largest age group, composing 45.24% of the catch population. Male: female ratio was 1: 0.779 and males were dominant. Study of sexual maturity stages and GSI showed that common Kilka spawning begins in February and the peak was in May and June. Survival rate was 0.239 yr^{-1} . Natural and fishing mortality coefficients were 0.448 yr^{-1} and 0.983 yr^{-1} . The exploitation rate calculated up to 0.687 indicating the species over fishing. Our results showed that the mean length and weight of common Kilka population has increased but the mean age decreased during the last years.

Keywords: *Clupeonella caspia* ; Caspian Sea; Growth; Reproduction; Age

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