

LENGTH–WEIGHT RELATIONSHIPS OF FIVE FRESHWATER FISH SPECIES FROM THE HATAY PROVINCE, TURKEY

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Abstract: Length–weight relationships of freshwater fish species which are *Carasobarbus luteus*, *Chondrostoma regium*, *Clarias gariepinus*, *Anguilla anguilla* and *Cyprinus carpio* from the Hatay province, Turkey were investigated. Values of the parameter “b” of length–weight relationships ($W=aL^b$) ranged from 2.767 to 3.282.

Keywords: Length–weight relationships, *Carasobarbus luteus*, *Chondrostoma regium*, *Clarias gariepinus*, *Anguilla anguilla*, *Cyprinus carpio*

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Introduction

Hatay has many freshwater resources which are Asi river, Gölbası lake, Karasu and Afrin stream system. Carp, sand smelt, catfish, siraz and chub are the natural freshwater species in the commercial fish market in Hatay region. Hatay is one of one place in production of chub, siraz, sand smelt in the Mediterranean region (Akyurt, et. al., 2003). Siraz and carp are most caught fish and rainbow trout only one species cultured in inland waters in Hatay region.

Length–weight relationships of fish are useful in fisheries ecology and stock assessment for converting growth-in-length to growth-in-weight, for estimating condition factor, for geographic comparisons of life histories (Pauly, 1983; Petrakis and Stergiou, 1995; Gonçalves, et. al., 1997; Froese and Pauly, 2007). Thus, the aim of the present study was to investigate the length–weight relationships of five freshwater fish species from the Hatay province, Turkey.

Materials and Methods

The fish samples were collected from the commercial fish markets in the Hatay province from March to May 2003. Specimens were identified according to the Geldiay and Balık (1999) and measured to the nearest centimetre total length (TL) and weighted to the nearest

gram total weight (W). The LWR for the total body weight was calculated using the equation: $W=a*TL^b$; where W is the total weight (g), TL is the total length (cm), a and b are the parameters of equation. Confidence limits of the parameter b were estimated %95 (Santos, et. al., 2002).

Results and Discussion

The results of the L-W analysis of five fish species are given Table 1. Fish samples of the species examined in this study ranged from 95 (*Cyprinus carpio*) to 212 (*Anguilla anguilla*); b values varied from 2.767 (*Anguilla anguilla*) to 3.282 (*Chondrostoma regium*); r^2 values ranged from 0.709 (*Chondrostoma regium*) to 0.983 (*Cyprinus carpio*). As to type of growth, isometric growth in one species, negative allometry in two species and positive allometry in two species were obtained (Table 1).

For Atatürk Dam Lake, L-W relationships for four fish species were presented (Başusta and Çiçek, 2006), one of which is also included here in this species is *C. luteus* (b=2.970, $r^2=0.959$). Torcu-Koç et. al., 2006 presented L-W relationships for 30 freshwater fish from Turkey, four of which is also included herein, these species are *C. luteus* (b=3.08, $r^2=0.984$), *C. regium* (b=3.24, $r^2=0.927$), *C. gariepinus* (b=2.99, $r^2=0.922$ for female, b=2.85, $r^2=0.914$ for male).

Table 1. Length - weight relationships for five fish species from the Hatay region, based on $W=aL^b$

Species	n	TL _{min} -TL _{max}	W _{min} -W _{max}	a	b±%95CI	r ²
Sarı benli (Bizir), Himri / <i>Carasobarbus luteus</i> (Heckel, 1843)	154	17.9-34.4	76-512	0.077	2.837 ±0.355 ^{A-}	0.815
Kababurun, Brond-snout / <i>Chondrostoma regium</i> (Heckel, 1843)	128	18.4-33.8	68-467	0.001	3.282 ±0.221 ^{A+}	0.709
Yılan balığı, Eel / <i>Anguilla anguilla</i> (Linnaeus, 1758)	212	45.1-61.8	77-406	0.005	2.767 ±0.280 ^{A-}	0.844
Karabalık, Catfish / <i>Clarias gariepinus</i> (Burchell, 1822)	179	18.2-47.0	79-842	0.008	2.967 ±0.329 ^I	0.959
Sazan, Common carp / <i>Cyprinus carpio</i> Linnaeus, 1758	95	20.0-35.2	231-545	0.021	3.112 ±0.176 ^{A+}	0.983

Species in bold are not included in FishBase (Froese and Pauly, 2007) L-W relationships.

Conclusion

To the author's best knowledge, this study is the first reference on length–weight relationships for fish species that is *Anguilla anguilla* in the Turkish inland water. Also no LWR estimates were previously available for these species inhabiting the Hatay region that is presented in this study for first time.

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