

A contribution to the biology of *Acanthalburnus urmianus* (Günther, 1899) (Osteichthyes: Cyprinidae): an endemic fish of Iran

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Acanthalburnus urmianus (Günther, 1899) is a cyprinid endemic to the Lake Orumiyeh basin in the north-west of Iran, apparently in the southern and western tributaries (GÜNTHER 1899). It seems that fishes collected from the middle Aji Chai (or Talkkeh Rud) near Tabriz and Zarrineh Rud in the Lake Orumiyeh basin belong to this species (ABDOLI 2000, COAD 2002). Details of its habitat requirements are unknown but it has been collected in both rivers and lakes (COAD 2002). Some aspects of the biology of the species have been studied by ABDOLI (2000) and COAD (2002), but information on age structure and growth is not available. We studied these aspects in the Orumiyeh basin.

The study was performed at Kazemi dam in the Lake Orumiyeh basin. The dam is constructed on the Zarrineh Rud in West Azarbaijan province. It is located 85 km southeast of Miandoab (36°58'N, 46°06'E) and is an earth dam with a clay core. The crest length is 730 metres, the maximum height is 48 metres, and the dam has a total capacity of 645 million m³. The mean discharge is 44m³/s. Six sampling sites were selected along the dam.

A total of 1510 specimens of *A. urmianus* were sampled in May and October 1996 by gill net (25 m length and 1.5 m height, with a 10 mm mesh size). All specimens were preserved in 10% formalin and taken to the laboratory. In the laboratory, each fish was measured and weighed to the nearest 1 mm and 0.1 g respectively. Sex was determined by visual observation of the gonads and secondary morphological characteristics. 58 specimens were aged by scale reading (BAGENAL 1978). The regression relation between length and weight was obtained by the formula (BAGENAL 1978): $\ln W = \ln a + b \ln L$. We used von Bertalanffy growth curves to quantify growth patterns of females and males (VON BERTALANFFY 1938): $L_t = L_\infty (1 - \exp \{-k [t - t_0]\})$. Where L is the theoretical asymptotic length; t is the age in years, K is the body growth rate coefficient, and t_0 is the hypothetical length at age zero (RICKER 1975).

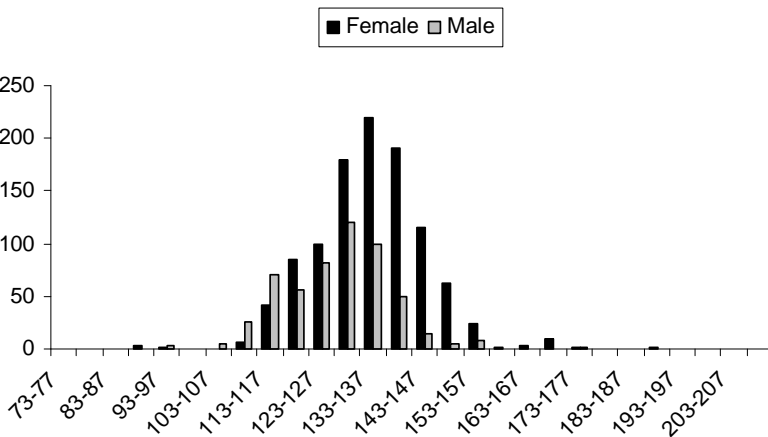


Fig. 1. Length frequency distribution of *Acanthalburnus urmianus* from Kazemi dam.

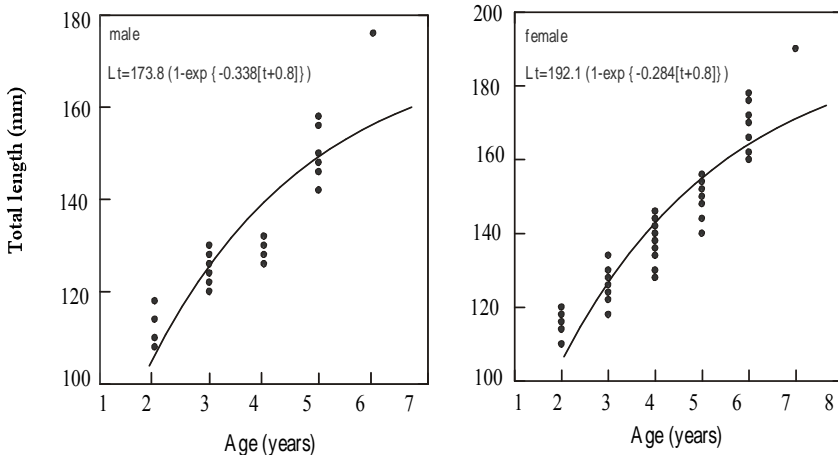


Fig. 2. Relationship between total length and age in *Acanthalburnus urmianus* from Kazemi dam.

The maximum length and weight observed were 190 mm and 40 g, respectively, representing a size range of 115-187 mm TL (Fig. 1) and a weight range of 16-40 g. Age determination by scales showed six age-groups (0+ to 6+) in males and seven age-groups (0+ to 7+) in females, and indicated that years 0, 1 and 7 were poorly represented. The lowest observed age of 0-1 years suggests that the younger fish are not collected by a gill net with 10 mm mesh size. The von Bertalanffy growth model showed that *A. urmianus* is a relatively fast-growing, short-lived species, reaching a maximum age of 7 years (Fig. 2).

The von Bertalanffy growth curve was estimated as $K = 0.427$ in males and $K = 0.506$ in females, indicating that females grow faster. The sex ratio was 598 ♂ : 912 ♀. The length-weight relationships were linear for males, $\ln \text{weight} = -7.744 + 2.227 \ln \text{length}$, and for females, $\ln \text{weight} = -11.496 + 3.027 \ln \text{length}$, and there were no significant differences between males and females (ANCOVA, $p > 0.05$).

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