

A systematic and ecological study of *Aphanius vladykovi* Coad, 1988 (Actinopterygii: Cyprinodontidae) in Iran

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Abstract. A multivariate statistical analysis was performed on the morphological characters of four populations of *Aphanius vladykovi*. Factor analysis revealed that interlocality morphological variations consist of characters such as total length, predorsal length, preventral length, preanal length, head length, head width and head depth. By using one way ANOVA analysis of 38 meristic and morphometric characters examined for males and females, 33 were significantly different ($p < 0.05$) among all populations. Three localities for *Aphanius vladykovi* were found for the first time. The species is mainly carnivorous and generally has the same diet at all four stations examined. The gut contents consisted mostly of *Diaptomus*, *Daphniae* and filamentous algae. This fish forms schools, swimming and feeding together. Teeth are found in both jaws of the superior mouth in a single row and are tricuspid.

Key words. Systematics, ecology, *Aphanius vladykovi*, Cyprinodontidae, Iran, Middle East.

Introduction

The Cyprinodontidae are represented in Iran by six species (WILDECAMP 1993, COAD 1995, KEIVANY & SOOFIANI 2002). The Zagros Pupfish, *Aphanius vladykovi* Coad, 1988 is an endemic species restricted to an area of the central Zagros mountains of Iran, and is an attractive species for keeping in aquaria. Its biology is almost entirely unknown and almost the only report on this species is the original description given by COAD (1988; see also KEIVANY & SOOFIANI 2002, KEIVANY 2004). *Aphanius vladykovi* is uniquely characterised and differentiated from its closest, putative relative, *A. sophiae* Heckel, 1847, by a high count of lateral line scales and by different pigmentation patterns. It became separated from the common ancestor it shared with *A. sophiae* by the orogenic events which led to the formation of the Zagros Mountains and to the isolation of the upper reaches of the Karun river basin, by the development of tangs throughout the mountains (COAD 1998).

This paper describes four populations from Chaharmahal-va-Bakhtiari province in Central Iran. The morphological and ecological characters of *A. vladykovi* were studied for an investigation of sexual dimorphism and interpopulation variation, territorial behaviour, gut contents and dentition.

Material and methods

Four populations of *Aphanius vladykovi* were studied morphologically and ecologically. 116 specimens from all four populations were studied for biometric characters. The numbers of individuals sampled per locality, and the localities, all in Chaharmahal-va-Bakhtiari province, are as follows: Shalamzar, a small pool (N=30), Koran, a small stream (N=33), Choghahast, a long