

# STUDIES ON THE BIOLOGY OF THE VULNERABLE FISH *APHANIUS FASCIATUS* NARDO 1827 (CYPRINODONTIDAE) AT THE GHADIRA WETLAND IN THE MALTESE ISLANDS

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## Abstract

A population of *Aphanius fasciatus* Nardo 1827 from a wetland community in the Maltese islands was sampled for four months. The sex and juveniles ratios, reproductive state and lengths were studied. The population showed an abundance of females (3:1), a relatively high investment in juveniles and sustained reproduction typical of fish species that inhabit harsh environments. In this study females were found to be slightly shorter than males.

*Keywords: Fishes, Growth, Lagoons*

## Introduction

Over the last decade and largely in response to human pressure *A. fasciatus* Nardo 1827 has disappeared rapidly from the Maltese Islands, so that it is now properly recorded at just two geographically isolated sites occupying a total of 0.15km<sup>2</sup>(1). Despite the fact that locally it is classified as vulnerable there are few scientific studies on the biology of this organism. This paper provides information on *A. fasciatus* from one of the above sites, the Ghadira wetland in Mellieha. The site consists of land nestled between two hills and just inland of the sea at Mellieha bay. The wetland consists of a central saline pool that rapidly becomes hypersaline during the peak summer months. To the west of the pool lies a freshwater reservoir which is considerably deeper than the central pool. A total of 841 fish were sampled four times between June and October 2008 using baited minnow traps in the saline waters of the central pool and in the freshwater reservoir (over 2.5m in depth). A shallow channel maintains connection between the two in the summer months. Abiotic factors were monitored throughout this period. Identification of the adult fish was facilitated by the sexual dimorphism exhibited by males and females of the genus *Aphanius*. Juveniles were identified as being 27mm or under in size.

## Results and Discussion

At the wetland the females were more abundant and overall a sex ratio of 3:1 was recorded. The higher ratio of females is typical of fish species that inhabit harsh environments where greater investment in reproductive capacity is necessary. Similar ratios were observed in other studies on killifish in lagoon habitats which indicates that the Greek and Maltese habitats are exposed to similar abiotic features such as hypersalinity and high temperatures (2). Females exhibited sustained reproductive behaviour with swollen bellies typical of pregnant fish from April through to late October while temperatures remained warm and favourable. The ratio of juveniles to adults was 1:1.3 or approximately 50% of the total population which is again indicative of high investment in the generation of juveniles. Females were slightly shorter (54.4mm SD8.6mm) than males (57.6mm SD 8.9mm). The mean size of the killifish reported at the Ghadira wetland is larger than that reported in other studies on similar habitats (2) and a contributing factor is the freshwater reservoir where the mean size of fish is considerably larger (60.5mm) than in the central saline pool (42.4mm). While the population in the central pool remains vulnerable as they are exposed to extreme abiotic conditions, the freshwater reservoir offers a reserve for the adult killifish where conditions are more favourable. The conservation of this part of the reserve is therefore critical to the survival of the population.

## References

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