PHENOTYPIC VARIABILITY OF THE KILLIFISH *APHANIUS FASCIATUS* (NARDO, 1827)

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Abstract

Samples of the cyprinodontid *A. fasciatus* from the Northern and Central basins of the Venice lagoon were compared in terms of phenotipic variability. Results suggest that fishes inhabiting the two basins differ in some life history traits and in the fluctuating asymmetry of lateral bars.

Keywords: Teleostei, Adriatic Sea, Brackish Water, Life Cycles, Conservation

Introduction

Estuaries and coastal lagoons represent important natural areas for fish communities. The Venice Lagoon is the largest lagoon in the Mediterranean basin, covering an area of about 540 km^2. It is characterized by a complex patchwork of shallow water habitats. Among them, saltmarshes offer many different ecological niches and resources to nektonic community. The extension of these habitats is subject to a progressive reduction due to human activities. For these reasons, the European Directive 92/43/EEC ('Habitat' Directive) lists these habitats in Annex I as natural habitats of community interest. *Aphanius fasciatus* (Pisces: Cyprinodontidae) has been considered by previous studies [1] as a typical species characterizing the nektonic community of salt marsh creeks. It is also listed in Annex II of the Habitat Directive as a '*species of community interest whose conservation requires the designation of special areas of conservation*'. Other species belonging to the order Cyprinodontiformes have been used in many studies of environmental monitoring of salt marsh systems [2, 3, 4]. In the present study, first results of the variation of some phenotypic traits between fishes inhabiting two main basins (Northern vs Central) is reported, in order to assess the health of natural populations of *A. fasciatus* and in the perspective of its potential use as "biomonitor" of ecological status and variability of saltmarshes in the Venice lagoon.

Material and Methods

Samples of *A. fasciatus* were collected in the Northern and Central basin of the Venice lagoon using a beach seine. For each specimen a set of phenological traits were collected: Standard Length (SL), Total Weigth (TW) and number of vertical bars on each body side. A Condition Factor CF=(TW*100)/SL^3 was calculated for each individual.

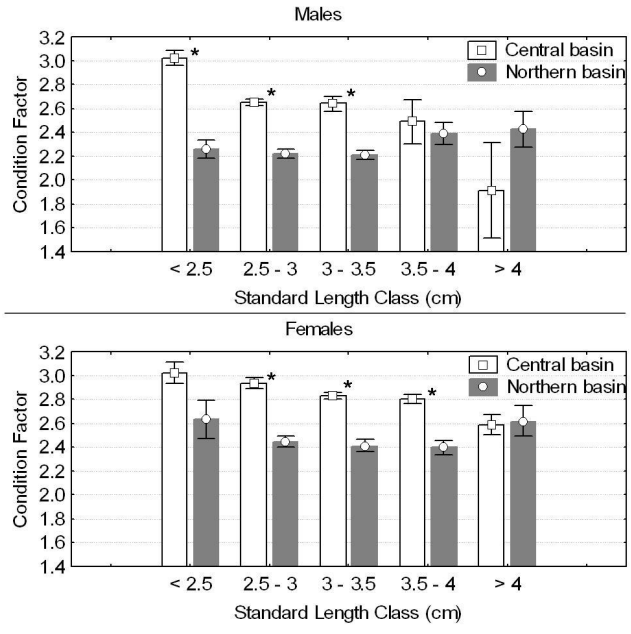

Fig. 1. Condition Factor (mean ± SE) of males and females, calculated for five size classes in the two basins. * = significant statistical difference for p<0.05 by Mann-Whitney test.

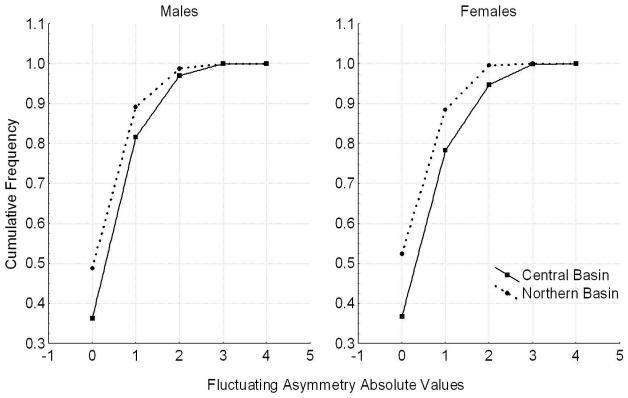

Fig. 2. Cumulative frequencies values of fluctuating asymmetry (FA) in males and females of *A. fasciatus* collected in the Northern and Central basin of the Venice lagoon

The difference in the number of vertical bars between the two body sides was used to assess the absolute values of fluctuating asymmetry (FA) [5] and to test for its variability between the two basins. The degree of FA may be used as indicator of developmental instability due to environmental stress [6]. Males and females were analyzed separately, due to the sexual dimorphism of this species.

Results and Discussion

The mean values of CF of fishes in the Central basin were higher than that of the Northern one within the smaller and intermediate size classes, whereas they were similar or slightly higher in the Northern basin for larger size classes (Figure 1). This suggests the presence of different life history traits, especially in size/age-specific growth rates, or in the level of reproductive and somatic investment. Also the degree of FA changed significantly between the two basins, with higher frequencies of asymmetry in the Central basin (Figure 2). Although further studies are needed to properly explain the patterns of phenotypic variability observed in this species, the differences found between the two basins suggest the potential use of this species as "biomonitor" for the variation of saltmarsh habitat quality.

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