

NOTES ON THE REPRODUCTIVE CONDITION OF EARLY COLONIZING *S. LURIDUS* IN THE SICILY STRAIT (MEDITERRANEAN SEA)

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Abstract

This paper summarizes some observations on gonad development and fecundity of the Lessepsian migrant *Siganus luridus* (Osteichthyes: Siganidae), recently settled in the islands of Malta and Linosa (Sicily strait, Mediterranean sea). The analysis of ovarian and testicular development showed that these early colonizers attain final gonad maturation and have the potential for successful reproduction.

Keywords : *Sicilian Channel, Fishes, Water Convection.*

Introduction

Siganus luridus (Osteichthyes: Siganidae) is an Indo-pacific species which entered into the Mediterranean through the Suez Canal [1], becoming one of the most successful exotic fishes in this sea [2]. Recently, the finding of new settled populations in the Sicily strait [3] offered a valuable opportunity for studying a Lessepsian migrant during the early phases of colonization [4]. As far as we know, these individuals, together with Tunisian siganids [5] represent the westernmost propagules of the species in the Mediterranean.

Materials and Methods

The study is based on a sample of 49 individuals (13.5-24.6 cm total length) captured in Linosa (N=43) and Malta (N=6) in July-August 2003 and October 2006, respectively. These specimens represented the first siganids to be recorded in these two islands. Gonads were processed through routine histological analyses; oocyte dynamics were reconstructed by oocyte size frequency histograms and fecundity estimates were made on (N=11) ripe ovaries, according to the gravimetric method. Gonads were staged on the basis of macroscopic [2] and microscopic [4] criteria and follicular atresia was estimated by counting the number of atretic follicles included in 10 sectors of 0.39 mm² randomly selected in the histological sections.

Results and Discussion

Both males and females had reached final stages of gonad maturation and reproductive behaviors were observed. In August at Linosa, mature individuals were represented by a number of 8 ripe (13.8-17.0 cm TL) and 4 spawning (16.5-21.8 cm TL) females plus N=20 running males (13.5-24.5 cm TL); in October at Malta, a number of 3 ripe females (23.8-24.6 cm TL) plus 2 running males (23.0-24.0 cm TL) were found.

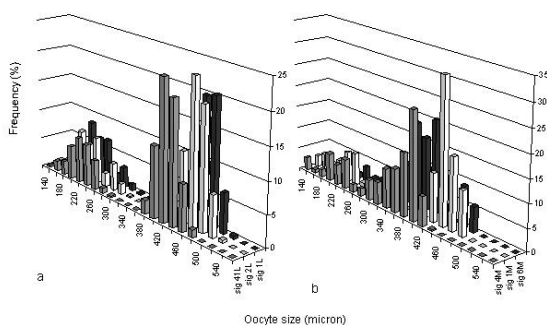


Fig. 1. Size frequency distribution of secondary growth oocytes in (N=6) ripe *S. luridus* captured in August at Linosa (a) and in October at Malta (b). N=500 oocyte/ovary were measured.

Absolute fecundity ranged from 115,739 to 740,433 oocytes per female and relative fecundity ranged from 1,239 to 3,162 oocytes g⁻¹. Fecundity of Linosa and Maltese individuals were within the range of values found in a Lebanese population [2]. The atresia rates in these new colonizers appeared moderate and analogous to what is known for other teleost species during the pre-reproductive stage [6]. In developing and ripe females, the percentage of secondary growth phase oocytes (SGP) in atresia was

always below 15%, with the exception of a female which presented the 46.7% of atretic SGP. Atretic oocytes were not detected in immature nor in spawning females.

As emerged by oocyte size distribution analyses, females at advanced maturity stage presented a bimodal size frequency distribution of SGP oocytes (Fig.1). This finding was validated by histological observations and indicated an ovarian development of the *group-synchronous type*. The comparison with Lebanese individuals [2] showed relevant differences in the distribution of maturity stages and suggests that the reproductive season of *S. luridus* in the Sicily strait could be delayed with respect to the eastern Mediterranean. To conclude, our results showed that *S. luridus* has the potential for successful reproduction in the newly colonized areas and indicated the potential of this species to spread across new sectors in the central and possibly western Mediterranean. It is clear that extensive temporal and spatial samplings would allow to a proper description of their reproductive cycle, but up to date, their small abundances both in Linosa [4] and Malta (Azzurro unpublished data) rendered this task impracticable.

References

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