Infrapopulations of Sclerocollum saudii Al-Jahdali, 2010 (Acanthocephala: Cavisomidae) in the rabbitfish Siganus rivulatus (Teleostei, Siganidae) from the Saudi coast of the Red Sea

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Abstract:

In infrapopulations of helminth parasites, density-dependent effects, through some form of intra- and interspecific competition, play an important role in shaping and regulating the infrapopulations. The mechanisms responsible for these processes have often been observed in laboratory studies and rarely studied under natural conditions. Here, 24 natural infrapopulations (77-447 individuals) of the acanthocephalan Sclerocollum saudii Al-Jahdali, 2010 from the fish Siganus rivulatus consisted of cystacanths, newly excysted juveniles, immature and mature worms, distributed in a well-defined fundamental niche (anterior 60% of the intestine). Each of these stages exhibited a significantly different longitudinal distribution within this niche. In small infrapopulations, cystacanths and newly excysted juveniles were found in the sixth 10% of the intestine, immature worms in the fifth 10% and mature worms in the anterior 40% of the intestine. However, their proportions followed a clear ascending order in each infrapopulation, and the female:male ratios of both immature and mature worms were distinctly female-biased. In large infrapopulations, mature worms existed partially in the site of immature ones, where a differential mortality among immature females was constantly observed. However, the proportions of immature worms increased significantly and those of mature worms decreased significantly, the mean lengths of immature and mature females decreased dramatically and the female:male ratios were distinctly male-biased. The mean sizes of immature and mature males seemed stable through all infrapopulations. The distribution of mature males and females suggests intense male:male competition for access to females, and reveals that larger females are copulated prior to the smaller ones. The results are statistically significant and suggest that infrapopulation self-regulation is through density-dependent mechanisms, in which immature females may play a key role.

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