DISTRIBUTION OF TWO MONOGENEAN OF *TRACHURUS PICTURATUS* FROM TUNISIA, MEDITERRANEAN SEA AND MADEIRA ISLAND, ATLANTIC OCEAN.

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Abstract

The blue jack mackerel, *Trachurus picturatus* (Osteichthyes, Carangidae) is considered as one of the most commercial fish in Mediterranean and Atlantic waters. On this work we aimed to study the occurence of monogenean parasite communities on this Carangidae species in the Mediterranean Sea and the Atlantic Ocean, in order to better understand the environmental conditions for the transmission of these ectoparasites. From November 2017 to December 2018, 248 fish (126 from Tunisia and 122 from Madeira Island) were collected and examined for ectoparasites. 243 specimens of *Pseudaxine trachuri* and 50 specimens of *Gastrocotyle trachuri* were collected from the gills of *T. picturatus* from the Tunisian coast. However, only 149 specimens of *P.trachuri* occured in the blue jack mackerel from the Madeiran coast.

Keywords: Mediterranean Sea, North Atlantic, Parasitism, Fishes

Throughout a one year period, 126 fish of *Trachurus picturatus* (Bowdich, 1825), were collected from local fishermen in Bizerte coast of Tunisia, and 122 specimens were obtained from a local fish market of Madeira in the north-east Atlantic. Fish samples were weighed, measured and examined for parasites under a stereomicroscope. All parasites were isolated, counted and preserved in 70% ethanol. In this study, the ecological indexes of monogenean parasites were determined according to Bush et al. (1997): prevalence (P%) is the number of hosts infected with one or more individuals of a particular parasite species divided by the number of hosts examined for that parasite species. Mean intensity (MI) is the average intensity of a particular species of parasite among the infected members of a particular host species. The abundance (A) is the average number of individuals of a particular parasite in/on a single host regardless of whether or not the host is infected. Prevalence was compared between regions using the chi-square test; for mean intensity, the Wilcox test was used. All the statistical tests were performed at the significance level of 5%.

In the gills of *T. picturatus* from the Mediterranean, we found two monogenean species (Monogenea: Gastrocotylidae) : *Pseudaxine trachuri* (Parona & Perugia, 1890) and *Gastrocotyle trachuri* Van Beneden and Hesse, 1863. Whereas, in Atlantic specimens, fishes are infected only by *P. trachuri*.

Tab. 1. Prevalence (P%), abundance (A) ± sd and mean intensity (MI) ± sd of monogenean parasites recovered from Trachurus picturatus from Tunisian coast and Madeira Island.

	No. of examined fish	*Pseudaxine trachuri*				*Gastrocotyle trachuri*			
		No. of infected fish	P%	MI	A	No. of infected fish	P%	MI	A
Tunisia	126	85	67.46	2.86 ± 2.14	1.9* ± 2.2	20	15.87	2.50 ± 2.01	0.39 ± 1.2
Madeira	122	77	63.11	1.94 ± 1.14	1.22* ± 1.3	0	0	0	0

*Level of significance with P < 0.05.

The Wilcox test revealed a significant difference in abundance of *P.trachuri* between the two geographic regions (p = 0.0491). However, the chi-square test showed a non significant difference in prevalence of this parasite species between the Atlantic and the Mediterranean Sea (X-squared = 0.17, p = 0.68). In the Mediterranean Sea, the high prevalence of this parasite throughout a one year period, could be explained by the direct transmission, even across species from the same genus sharing the same schools (Hermida *et al*., 2016). But, in the Atlantic Ocean, the high prevalence could be due to the sampling period. Indeed, in summer and autumn seasons, when the water temperature increased, the biotope becomes optimal for reproduction and survival (Jansen & Bakke, 1991). However, in Tunisian waters the mean infection of *G.trachuri* is lower than the one of *P.trachuri,* possibly because of its larger body size. In fact, there is a negative correlation between the monogenean body size and the mean intensity of fish infection (Poulin, 1999).

Spearman rank correlation showed that abundances of the two parasites are positively correlated with fish size (Total length or Total weight), only for Mediterranean specimens (Tab. 2). This could be explained by the increased colonization by monogeneans due to the larger gill surfaces providing more available habitat (Sasal *et al*., 1997).

Tab. 2. Correlations between parasite abundance and host features.

	Abundance	
	Pseudaxine trachuri	*Gastrocotyle trachuri*
Total length	P = 0.001 ; rho 0.29	P = 0.002 ; rho 0.264
Total weight	P = 0.002 ; rho 0.27	P = 0.016 ; rho 0.212

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