WHAT COULD THE OCCURRENCE OF *PRODISTOMUM POLONII* IN MADEIRA ISLAND REVEAL ABOUT THE CONNECTIVITY BETWEEN THE MEDITERRANEAN AND THE ATLANTIC ?

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Abstract
The blue jack mackerel, *Trachurus picturatus*, is a highly consumed pelagic fish in both Mediterranean and Atlantic waters. The present study aims to investigate the digenean parasite species present in fish samples captured off Madeira Island. In 2018, a total of 122 fish samples were collected and examined. Fifteen specimens of *Prodistomum polonii* were found in the intestine of *T. picturatus*, indicating low infestation rates. This discovery may be linked to transoceanic connectivity. Negative correlations between parasite abundance and fish size were observed, likely attributable to the dietary preferences of the host.

Keywords: Fishes, Parasitism, Warming, Mediterranean Sea, North Atlantic

During 2018, 122 fish of *Trachurus picturatus* (Bowdich, 1825), were collected from a local fish market from Madeira Island in the Eastern Central Atlantic. Fish samples were weighed and measured (Total weight (g)= 85.31± 69.59; Total length (cm)= 20.30 ± 5.07). Viscera were removed, placed in Petri dishes, and examined for the presence of digenean parasites under a stereomicroscope. All the collected parasites were isolated, counted, and preserved in 70% ethanol. The parasitological indices of the parasites were determined according to [1]. Correlations between fish size and parasite abundance were analyzed by using the Spearman rank correlation test.

Fifteen specimens of the digenean species *Prodistomum polonii* (Molin, 1859) [3] were collected from the intestine of 12 *T. picturatus* samples (Figure 1). This trematode species has been reported previously on *T. picturatus* only from the French part of the Mediterranean Sea (Corsica) [2]. However, previous studies mentioned its occurrence in its congeners *T. trachurus* and *T. mediterraneus* mainly from the Mediterranean but also from the North East Atlantic (Bay of Biscay, Celtic Sea, and the Norwegian part of the Norwegian Sea) [8]. The present investigation is the first report of *P. polonii* in the Central Atlantic (Madeira).

Previous studies have been conducted on the parasite fauna of *T. picturatus* from off Madeira Island without mentioning any infestation with the digenean *P. polonii* [4-6].

The occurrence of this parasite may give rise to several hypotheses mainly associated with connectivity, such as its potential introduction via the horizontal migration of infested *Trachurus* fishes from the Mediterranean. Moreover, it could be linked to the potential colonization of the primary intermediate host within the region over recent years, possibly attributable to ecosystem disturbances and the effects of global warming.

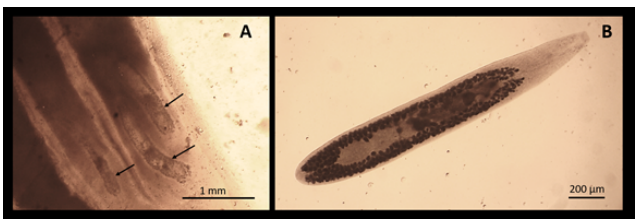

Fig. 1. Collected *Prodistomum polonii* from *T. picturatus*. A: 3 specimens located in the host intestine (Arrows); B: One parasite specimen (In vivo).

The parasitological indices (Prevalence P = 9.8%; mean Intensity mI = 1.3 ± 0.9; and mean Abundance mA = 0.12 ± 0.46) showed low infestation of *P. polonii*. The Spearman rank correlation test indicates that the parasite abundance was negatively correlated with fish size (Total length (P = 0.002; rho = -0.276) and Total weight (P = 0.002; rho = -0.28)) (Figure 2). Indeed, parasitic infestation varies according to the diet of each size class [4-5]. Furthermore, gastropods are the first intermediate host of lepocreadid digeneans [3] and constitute one of the main prey items of small horse mackerel in Madeira Island [7].

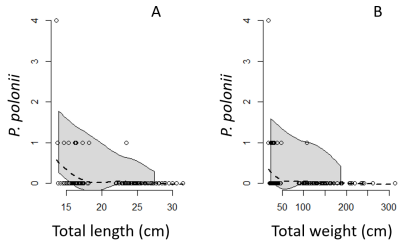

Fig. 2. Negative correlations between *Prodistomum polonii* abundance and host features caught from Madeira Island. A: Total length; B: Total weight.

Acknowledgements M. Hermida was financially supported by a post-doctoral grant from ARDITI, Project M1420-09-5369-FSE-000001.

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