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First record of the Parasite Nematodes *Anisakis simplex* in the migratory Fish Species *Pagellus bogaraveo* of the parasite in Syrian Marine Waters

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ABSTRACT

The black seabream *Pagellus bogaraveo* is an Atlantic migratory species recently recorded in Syrian marine waters. It has been exposed to internal parasites in its native habitat. The research was aimed to investigate the internal parasites that infect the fish species *P. bogaraveo* in the Syrian marine waters. A total of 306 individuals were collected from Ras Al-Basit in the north to Tartus in the south during the period from May 2020 to May 2021. The internal organs of the fish individuals (stomach, intestines and gonads) were examined to detect infection with internal parasites. The third larval of the parasite *Anisakis simplex*, which belongs to the phylum Nematoda, was isolated from the stomach and the gonads walls of *P. bogaraveo*. The current study is the first record of infection of *P. bogaraveo* with the parasite *A. simplex*, and the fourth record of this parasite among bony fishes in Syrian marine waters.

Keywords: *Pagellus bogaraveo*, internal parasites, *Anisakis simplex*, Syrian coast.

1. INTRODUCTION

The Blackspot seabream *Pagellus bogaraveo* (Brünnich, 1768) is a demersal fish, inhabiting in the East and North Atlantic. It is common in the Western Mediterranean; becomes rare east of Sicily, the southern Adriatic, Aegean Sea, Sea of Marmara, and is absent from the Black Sea (Krug, 1990; Bauchot and Hureau, 1986; Spedicato et al., 2002; Mytilineou et al., 2005; Chilari et al., 2006; Wirtz et al., 2008; Herrera, 2012). It has recently been recorded in the south-eastern Mediterranean Sea, Port Said, Egypt Stamouli et al., (2017), and the Syrian marine waters (Saad et al., 2020).

Fish are hosts to many types of parasites, including those that are pathogenic to other fish, or to vertebrates that eat fish meat, including humans, when fed by raw or undercooked fish infected with parasites. These parasites can cause mechanical damage during their movement within the tissues, which leads to stunted growth

and reproduction. The species *Anisakis simplex* is one of the most important internal parasites belonging to the phylum Nematoda that infects both fish and humans (Hoffmann, 1999).

2. MATERIALS AND METHODS

A total of 306 individual fish were collected from the area of Ras Al-Basit in the north to Tartus in the south, during the period from May 2020 to May 2021. The fish samples were dissected and the internal organs were examined (Figure 1). The fish were dissected by making a longitudinal incision in the ventral midline that extends from the beginning of the head of the fish to the end of the anus. The parasites were isolated and fixed using 70% ethyl alcohol, then the parasites were stained using Carmen stain according to the methods used worldwide (Amlacher, 1970; Lucky, 1977). It was then examined under the microscope at different magnifications until the parasite was classified according to the taxonomic key.

Figure 1 The host *Pagellus bogaraveo*, caught from the Coast of Lattakia

3. RESULTS AND DISCUSSIONS

The nematode of the species *Anisakis simplex* was isolated and identified from the outer wall of the intestines and gonads of several fishes of the migratory species *P. bogaraveo* for the first time in the Syrian marine waters during the winter season (Figure 2).

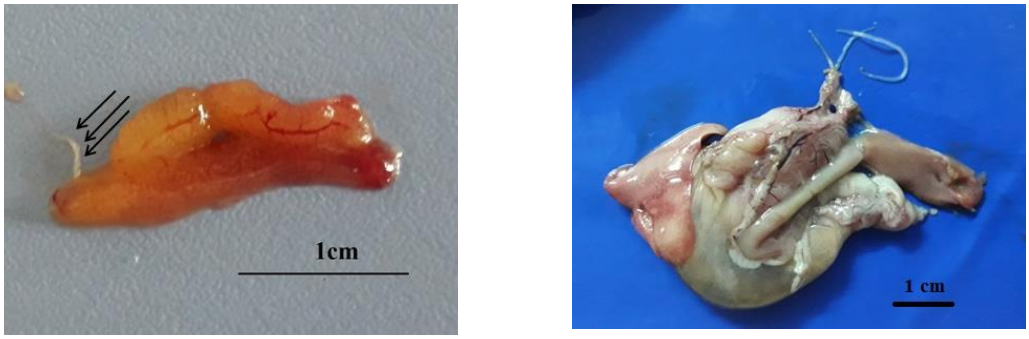

Figure 2 Where the parasite infects the internal organs: (a): The outer wall of the fish's intestines, (b): On the gonad.

The general form of the parasite

The third–stage larvae of this parasite in fish are characterized by: (A): The presence of a fork at the beginning of the front side of the body. (B): The esophagus is oblong in the abdominal region. (c): the opening of the rectum and the proboscis at the back (Figure 3).

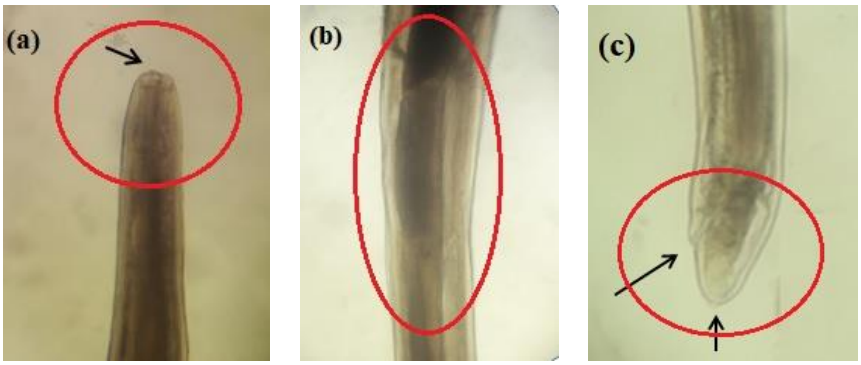

Figure 3 Morphology of *A.simplex* Isolat from *P. bogaraveo*, caught in Syria marine waters (a: Cephalic region, b: Digestive tract, c: Caudal region)

Table 1 Checklist of parasite nematodes (*Anisakis*) collected in different areas and in Syrian marine waters.

Host species	Parasite species	Area	References
L. whiffiagonis	*Anisakis simplex*	Syrian marine waters	Shaaban and Galiya, 2023
Euthynnus alletteratus	*A. simplex*	Syrian marine waters	Othman *et al*., 2022
Dentex macrophthalmus	*A. simplex*	Syrian marine waters	Masri *et al*., 2022
Pagellus acarne	*A. physeteris*	Algeria	-
Pagellus erythrinus	*Anisakis sp*	Turkey	-
Pagellus bogaraveo	*Anisakis sp*	Portugal	-

The parasitism of *Anisakis simplex* was recorded for the first time in Syrian marine waters on the intestines and gonads of the local species *Dentex macrophthalmus* Masri et al., (2022) and the intestines of both local fish species *Euthynnus alletteratus* Othman et al., (2022) and *Lepidorhombus whiffiagonis* (Shaaban and Galiya, 2023). Since *P. bogaraveo* is a migratory species from the Atlantic Ocean and recently recorded in the Syrian marine waters, it can be considered the main host causing the migration of the parasite from the western to the eastern Mediterranean. Which confirms the importance of this research (Table 1). In addition, a case of destruction of the tissue of one of the gonads infected with the threadworm was observed, which confirms the effect of this parasite on the tissues of the host organism, and the damage it will cause to the tissues of the human intestine, or an allergic effect if the parasite reaches it.

4.CONCLUSION

The nematode *Anisakis simplex* was isolated and identified from the outer wall of the intestines and gonads of *P. bogaraveo* for the first time in Syrian marine waters. Infected individuals were monitored during the winter.

Author Contributions

All authors contributed to the study's conception and design. Material preparation, data collection and analysis were performed by Mai Mostafa Masri and Waad George Sabour .

Informed consent

Not applicable.

Conflicts of interests:

The authors declare that there are no conflicts of interests.

Funding:

The study has not received any external funding.

Ethical approval

The Animal ethical guidelines are followed in the study for species observation & identification.

Data and materials availability

All data associated with this study are present in the paper.

REFERENCES

1. Amlacher E. Textbook of fish diseases (Engl.Transl.). T.F.H. Publ., Jersey City, 1970; 302.
2. Bauchot ML, Hureau JC. Sparidae. In: Whitehead PJP, Bauchot ML, Hureau JC, Nielsen J, Tortonese E (eds.). Fishes of the North-Eastern Atlantic and the Mediterranean. UNESCO, Paris 1986; 2:516–1007.
3. Chilari A, Petrakis G, Tsamis E. Aspects of the biology of blackspot seabream (*Pagellus bogaraveo*) in the Ionian Sea, Greece. Fish Res 2006; 77(1):84–91. doi: 10.1016/j.fishres.2005.08.003
4. Herrera JG. Updated information from the Spanish Blackspot seabream (Pagellus bogaraveo) fishery in the Strait of Gibraltar area. Working document presented to the second meeting of the FAO CopeMed II Working Group on Blackspot Seabream (Pagellus bogaraveo) of the Strait of Gibraltar area between Spain and Morocco, WGPG – Tangiers (Morocco), FAO occasional paper 10, 2012.
5. Hoffmann GL. Parasites of North American freshwater fishes, 2nd ed. Comstock Publ. Assoc., Ithaca, New York 1999; 576.
6. Krug HM. The Azorean blackspot seabream, *Pagellus bogaraveo* (Bruennich 1768) (Teleostei, Sparidae). Reproductive cycle, hermaphroditism, maturity and fecundity. Cybium 1990; 14:151–9.
7. Lucky Z. Method for The Diagnosis of Fish Diseases. Amerial Publication Co.Pvt. Ltd, New Delhi and New York, 1977; 140.
8. Masri M, Saad A, Sabour W, Layka T. First Record of the Parasitic Nematode *Anisakis simplex* in the Intestine and Gonads of *Dentex macrophthamus* off Syrian Marine Waters. Iraqi J Agric 2022; 19(1):1-14.
9. Mytilineou C, Politou CY, Papaconstantinou C, Kavadas S, D'Onghia G, Sion L. Deep water fish fauna in the eastern Ionian Sea. Belg J Zool 2005; 135(2):229–233.
10. Othman R, Galiya M, Layka T. First Record of The Nematoda Parasites from The Family Anisakidae on The *Euthynnus Alletteratus* (Rafinesque, 1810) Caught in The Marine Waters of Lattakia–syria. Asian J Adv Res 2022; 5(1):780–784.
11. Saad A, Masri M, Sabour W. First confirmed record of sparid *Pagellus bogaraveo* (Brünnich, 1768) in the Syrian marine waters (Levantine Basin). Mar Biodivers Rec 2020; 13(1):1. doi: 10.1186/s41200-020-0185-2
12. Shaaban Z, Galiya MY. First Record of the Anisakis simplex Parasites from the Family Anisakidae on the *Lepidorhombus whiffiganos* (Walbaum; 1974) Caught in the Marine Waters of Syria. Asian J Adv Res 2023; 6(1):180-183.
13. Spedicato MT, Greco S, Sophronidis K, Lembo G, Giordano D, Argyri A. Geographical distribution, abundance and some population characteristics of the species of the genus *Pagellus* in different areas of the Mediterranean. Sci Mar 2002; 66(S2):65–82. doi: 10.3989/scimar.2002.66s265
14. Stamouli C, Akel EH, Azzurro E, Bakiu R, Bas AA, Bitar G, Boyaci YÖ, Cakalli M, Corsini-Foka M, Crocetta F, Dragičević B, Dulčić J, Durucan F, Zrelli RE, Erguden D, Filiz H, Giardina F, Giovos I, Gönülal O, Hemida F, Kassar A, Kondylatos G, Macali A, Mancini E, Ovalis P, Paladini De Mendoza F, Pavičić M, Rabaoui L, Rizkalla SI, Tiralongo F, Turan C, Vrdoljak D, Yapici S, Zenetos, A. New Mediterranean biodiversity records (December 2017). Mediterr Mar Sci 2017; 18(3):534-1.
15. Wirtz P, Fricke R, Biscoito MJ. The coastal fishes of Madeira Island—new records and an annotated check-list. Zootaxa 2008; 1715(1):1–26.