

# Neoechinorhynchus Iraqensis Helminthes Isolated from Two Freshwater Fishes Species in Umm an Ni`aj Marsh in Maysan Province, South of Iraq

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## Abstract

A total 294 fish species collected as follows; *Silurus triostegus* (100) and *Planiliza abu* (194) were collected randomly from Umm an Ni`aj marsh during the period of sample collection Jan 2019 till Jun 2019. *Neoechinorhynchus iraqensis* is the parasite belonging to the phylum acanthocephala, during current study this parasite has recorded from the intestines of *S. triostegus* and *P. abu* hosts, where the infection rate in *P. abu* (22%) was higher than that of *S. triostegus* (10%). Current study dealt mainly with the study of some morphological characteristics of the parasite in order to diagnosis, after the parasite has been dyed and examined under a light microscope.

**Keywords:** *Neoechinorhynchus Iraqensis*, Helminthes, Freshwater Fishes, Umm an Ni`aj Marsh, Maysan, Iraq.

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## INTRODUCTION

All animals in nature, including fishes unprotected to parasites, these infections in fishes are public, it is not sign of pollution, as long as fish live in normal conditions (price & Tom, 1995). Fishes are infested with a wide spectrum of parasitic helminthes belonging to the major groups of monogena, digenea, cestoda nematodes and acanthocephala (Hoffman, 1998). Fishes are more at risk to infection when exposed to stress as a result of any defect in their circumstances, this tension may lead to death of fishes and more bio losses (Barnham, 1998). Some of these parasites may be transmitted from fishes or from fishes to bird to human, in this way of transmission, these parasites called Zoonotic parasites such as *Diphyllobothrium latum*, *Clonorchis sinensis*, *Heterophyes heterophyes* and *Anisakis simplex* (Roberts & Janovy, 2009). The earliest study on the parasites of Iraqi fish by Herzog. (1969), tested 16 species of freshwater fishes in central and southern Iraq, and recorded nineteen species of parasites, including tapeworms, nematodes and crustaceans. Previous studies revealed that the parasites of freshwater fishes had a great deal and much attracted the attention of researchers in Iraq as a result of fish culture industry (Abdullah & Rasheed, 2004). The importance of fish parasites is linked directly to the importance of the fish that they may affected. Therefore, the past knowledge of fish's breeder, parasites and their affect it's important fom economic view (Okaeme *et al.*, 2000). Maysan province is one of rich region of water resources, which

harbor of many fish species of high nutritional value, the aim of present study is determine *Neoechinorhynchus iraqensis* worm from different freshwater fishes and Recognized its morphological features of parasite in Maysan province, Southern of Iraq.

## MATERIALS AND METHODS

A total 294 fish species distributed as follows *Silurus triostegus* (100) and *Planiliza abu* (194) were collected randomly from Umm an Ni`aj marsh 31°35'35.2"N 47°37'50.8"E, at Maysan province during the period of sample collection Jan 2019 till Jun 2019 (Table, 1). Every fish has dissected according to Amlacher (1970), done by making a longitudinal incision starting from the end and going forward to the mouth. Fishes were examined to search of Acanthocephalan parasites in digestive canal, *Echinorhynchus iraqensis* worms were isolated from the intestine of both *S. triostegus* and *P. abu* fish. After isolating the parasitic worms carefully from the intestine of fishes washed in normal saline solution (0.9% NaCl) (Dakhil & Al-Musaedi, 2022). They were left in a refrigerator for a 12 of time for the evagination of their proboscises and relax the body (Abdullah, 2013). Acanthocephala were fixed in 70% ethanol. then transferred to acetocarmine stain for no more 6 min to dehydration the worms put in 70% ethanol for (10-15)min for 2-4 times some others the dry was carried out in ascending series of ethanol, 70% (3-6) min, 80% (3-6) min, 95% (3-6) min, then left exposed to air to dry for some

seconds (Khanal, 2003). With wood stick specimen transferred to clean glass slide, and arranged it in suitable position, then put a drop of DPX on specimen, and sensibly placed coverslip on slide. Place the slide on stable horizontal surface until the DPX dries. The measurement has performed with the help of the stage micrometer (SM) has a calibrated scale which is divided into 0.1mm and 0.01mm units. Worms identification had concluded as said by Bykhovskaya-Pavlovskaya et al. (1962) and Amin et al. (2001).

## RESULTS

A total 294 fish species distributed as follows *S triostegus* (100) and *P.abu* (194) were collected randomly from Umm an Ni`aj marsh 31°35'35.2"N 47°37'50.8"E during the period of sample collection from Jan 2019 till Jun 2019. *Neoechinorhynchus iraqensis* is the parasite belonging to the acanthocephalan, during current study this parasite was recorded from the intestines of *S. triostegus* and *P. abu*, where the infection rate in *P. abu* (22%) was higher than that of *S. triostegus* (10%) (Table. 1).

Table 1: Infection percentage *Neoechinorhynchus iraqensis* in fish species from Umm an Ni`aj marsh, Maysan Iraq.

Family and host name	common name	No. of fishes	No of infected fishes	Percentage
<b>Siluridae</b> <i>Silurus triostegus</i> Heckel, 1843	Jirri, Asian catfish	100	10	10
<b>Mugilidae</b> <i>Planiliza abu</i> Heckel,1843	Zori	194	43	22.16
<b>Total</b>		294	53	18.02

**The Description:** *Neoechinorhynchus iraqensis* was isolated from the intestine of *P. abu* and *S. triostegus*. It had two major bodies regions (Figure. 1, 2). One region, at the anterior end of the body, is a proboscis. The second region, posteriorly, is the trunk. The trunk is long and consisted of the main body and it is generally cylindrical in shape. Sexes are separated, male and female, gonads generally float within the body cavity.

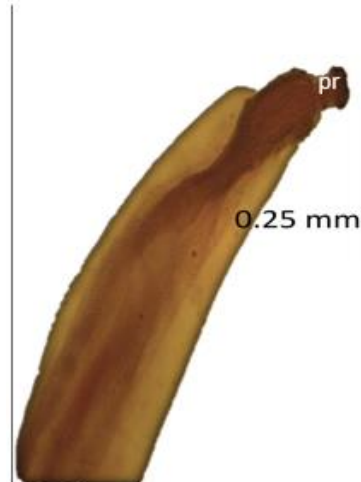


Fig. 1: Photograph, the anterior part of *Neoechinorhynchus iraqensis* (pr= proboscis) under the light microscope (10X)

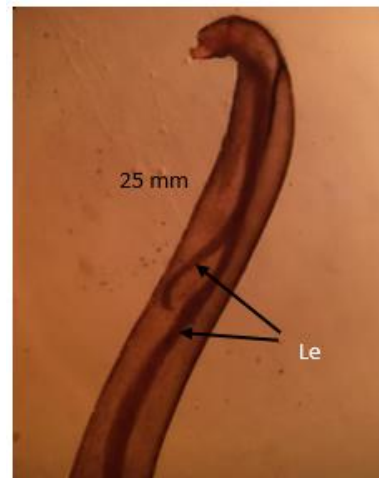


Fig. 2: Photograph, the anterior part of *Neoechinorhynchus iraqensis* (le=lemniscus) under the light microscope (10X).

**Male:** The male of *N. iraqensis* in *P. abu* is much shorter than the female, ranging 12 -23 mm long. The lemniscus being short and long. The short ranged 1.82 -3.88 mm long, and the long lemniscus ranged 2.10-7.71 mm long (Figure. 2). The reproductive system is located in the third posterior of the body. There are two unequal testes the anterior testis 1.0 -3.88 mm long, longer than the posterior 0.80 - 2.09 mm. There is one cement gland whose products to collect in a cement reservoir. One male in *S. triostegus* host had had measured it is similar in morphology to that of *P. abu* Measurements the length of body 10 mm, short and long lemniscus measures 1.72, 3.00 mm long respectively.

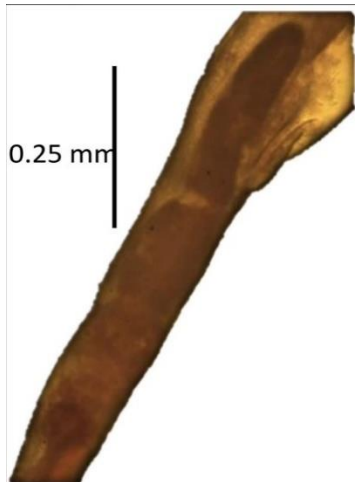


Fig. 2: Photograph, the posterior part of male of *Neoechinorhynchus iraqensis* (at= anterior testis; bt=posterior testis) under the light microscope (10X)

**Female:** The female of *N. iraqensis* from *P. abu* is longer than the male which has measure of 27- 71 mm. Proboscis length is 0.10- 0.132 mm (Figure. 3). The reproductive system consists of The ovary soon fragments into a large number of ovarian balls, egg was oval elongated. At the posterior end of the body cavity is selector apparatus, after selector apparatus there are uterus, which connects via a short vagina to a vulva. The female from *S. triostegus* host body length 20-50 mm long, Proboscis length is 0.09 -0.13 mm.



Fig (3). Photograph, the posterior part of female of *Neoechinorhynchus iraqensis* under the light microscope (10X).

## DISCUSSION

*Neoechinorhynchus iraqensis* the parasite belongs to (family Neoechinorhynchidae) is parasitizing in intestine of fishes as definitive host (Mhaisen, 2012). *N. iraqensis* was isolated for the first time in Iraq as species in *P. abu* ((reported as *Mugil hishni*) from Shatt al-Arab by Habash & Daoud (1979). then *N. iraqensis* erroneously reported as *N. agilis* was reported

from intestine of *P. abu* (reported as *L. abu*) from Al-Hammar marsh (Al-Daraji, 1986) according to Amin *et al.* (2001) & Mhaisen (2002). *N. iraqensis* in the present study was isolated from intestine of both *P.abu* and *S. triostegus* fishes. Results of current study agree with Amin *et al.* (2001) Who is isolated the worms from *P. abu*, Hashim.(2014) ; Hashim *et al.* (2015) recorded the parasite from *S. triostegus* host from Greater Zab river. *N. iraqensis* recorded present study was the female longer than male, there are two unequal testes the anterior testis was longer than the posterior and it is closely similar to those which investigated by (Khamees, 1983; Amin *et al.*, 2001). *N. iraqensis* have recorded, vary from the species *N. agilis* in the following aspects the female body in *N.iraqensis* measured (27- 71) mm in length and the male measured (12-23) mm in length. While *N.agilis* described by Petrochenko.(1956) the female measured (7.02)mm long and this clear that *N. iraqensis* female is huge in length compared with *N. agilis*. The characteristic features that distinguished *N.iraqensis* include proboscis has a length unequal to width, unlike that of *N. zabensis* which possess a proboscis about as long as width (Oguz *et al.*, 2012). The infection in *P. abu* higher than *S. triostegus*, and aslo we have observed that the parasite in *P. abu* is more comfortable in terms of color and size, Amin (1985), Was reported that Acanthocephala is more specific with *P. abu*.

## CONCLUSION

We can conclude from current study that *Silurus triostegus* and *Planiliza abu* freshwater fishes from maysan province were infected by *Neoechinorhynchus iraqensis* the Acanthocephalan parasite and have insured that by morphological characteristics of the helminths.

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