Description of new host record of genus *Hysterothylacium* Ward and Magath, 1917 from Siluridae catfish *Wallago attu* of Indus river, Sindh, Pakistan

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Abstract

Current research on host catfishes *Wallago attu* collected from river Indus, Jamshoro, Sindh, Pakistan for examination of nematode parasites. Total of 27 specimens belong to genus *Hysterothylacium* Ward and Magath (1917) collected through the examination of nematode parasites, processes with slandered method of nematodes and identifies as *Hysterothylacium carangis* Kalyankar (1971) species on the basis of diagnostic characteristics. Previously this species reported from intestine of fish *Carangoides malabaricus* of India, but present species is new host record which is reported from catfish *Wallgo attu* of river Indus, Jamshoro, Sindh, Pakistan.

Keywords: Nematode**,** *Hysterothylacium,* New record, Sindh, Pakistan

Introduction

Hysterothylacium genus established by Ward and Magath (1917). The nematodes of genus *Hysterothylacium* comprises more than 50 species, which are parasites of worldwide fishes Deardorff and Overstreet (1980). Species of genus *Hysterothylacium* recorded from different hosts and countries world including, *H. plagiostomorum* Linstow (1905) collected from stomach and gills of fish *Catorhinus maximus* and *Raja radiate* of Sri-Lanka, *H. serrani* Kalyankar (1972) collected from intestine of fish *Serranus ferio* of India, *H. winteri* Torres and Soto (2004) collected from intestine of fish *Eleginops maclovinus* of Chile, *H. synpapillus* Bilqees *et al*. (1971) collected from intestine of fish *Muraenesox cinereus* of Pakistan, *H. shamimi* Gupta and Begum (2007) collected from intestine of fish *Saurus indicus* of India, *H. vinodae* Gupta and Begum (2007) collected from intestine of fish *Saurus indicus* of India, *H. eurycheilum* Olsen (1952) collected from stomach and intestine of fish *Epinephelus itajora* of Anguilla, *H. aetobatum* Lakshum (2005) collected from intestine of fish *Aetobatus narinari* of India, *H. adumcum* Rudolphi (1802) collected from stomach and intestine of fish *Dissosticlus eleginoides* of South Georgia, *H. carangis* Kalyankar (1971) collected from intestine of fish *Carangoides malabaricus* of India.

But present species *Hysterothylacium carangis* is reported first time from catfish host *Wallago attu* of River Indus Jamshoro, Sindh, Pakistan, previously this species *Hysterothylacium carangis* reported by Kalyankar (1971) from intestine of fish *Carangoides malabaricus* of India. The reports on host catfishes belong to Siluriformes order from Pakistan are limited of those including, Ahmad *et al*. (2014), Ayaz *et al*. (2013), Khanum *et al*. (2008), Kakar and Bilqees (2008), Shakir and Khan (2006), Soofi *et al*. (2015, 2016a, 2016b, 2016c, 2016d, 2016e, 2017), hence present research work on nematode parasites of catfish *Wallago attu* belong to order Siluriformes has new addition in field of science.

Materials and Method

Host catfish *Wallago attu* of river Indus, Jamshoro, Sindh, Pakistan collected during present studies for examination of nematode parasites and brought to the Parasitology Laboratory, Department of Zoology University of Sindh, Jamshoro, Pakistan. A total of (27 ♀) specimens collected belong to genus *Hysterothylacium* Processes with standard method of nematodes. Live specimens were killed in hot 70% ethanol, cleared in lacto-Phenol and glycerol solutions and preserved in alcohol-glycerol solution. Temporary slide were made for drawing with the help of Camera Lucida. Photographs were taken with Camera Olympus DP12. Measurements are given in millimeter (mm).

Result and Discussion

Systematic Position:

Family Anisakidae Felix Dujardin, 1845
Genus *Hysterothylacium* Ward and Magath, 1917
Hysterothylacium carangis Kalyankar, 1971
Status: New host record
Number of specimen recovered: (27 ♀)
Number of host infected: 15
Host: *Wallago attu*
Site of infection: Intestine
Locality: River Indus at Jamshoro, Sindh, Pakistan

Description (Fig. 1 and Fig. 2)

Body of worm elongate measures 39.17-40.19 X 0.72-0.98, covered with thick, striated cuticle, lateral sides of body with deep cuticle grooves, as body appear in the form of segments. Anterior end of body broad, rounded and posterior end conical. Widest at level of genital opening. Mouth surrounded by 3 lips and one teeth, dorsal lip bear two papillae and each sub-ventral lip bear single papillae. Esophagus measures 4.27-4.31, with broad and short ventriculus measures 0.29-0.33, end with large ventriculus appendix measures 2.47-3.56. Excretory pore at anterior region of body. Tail little curved with caudal spine at the tip measures 0.41-0.46 mm in size. Anus near to tail region of body. Vulva pre-equatorial.

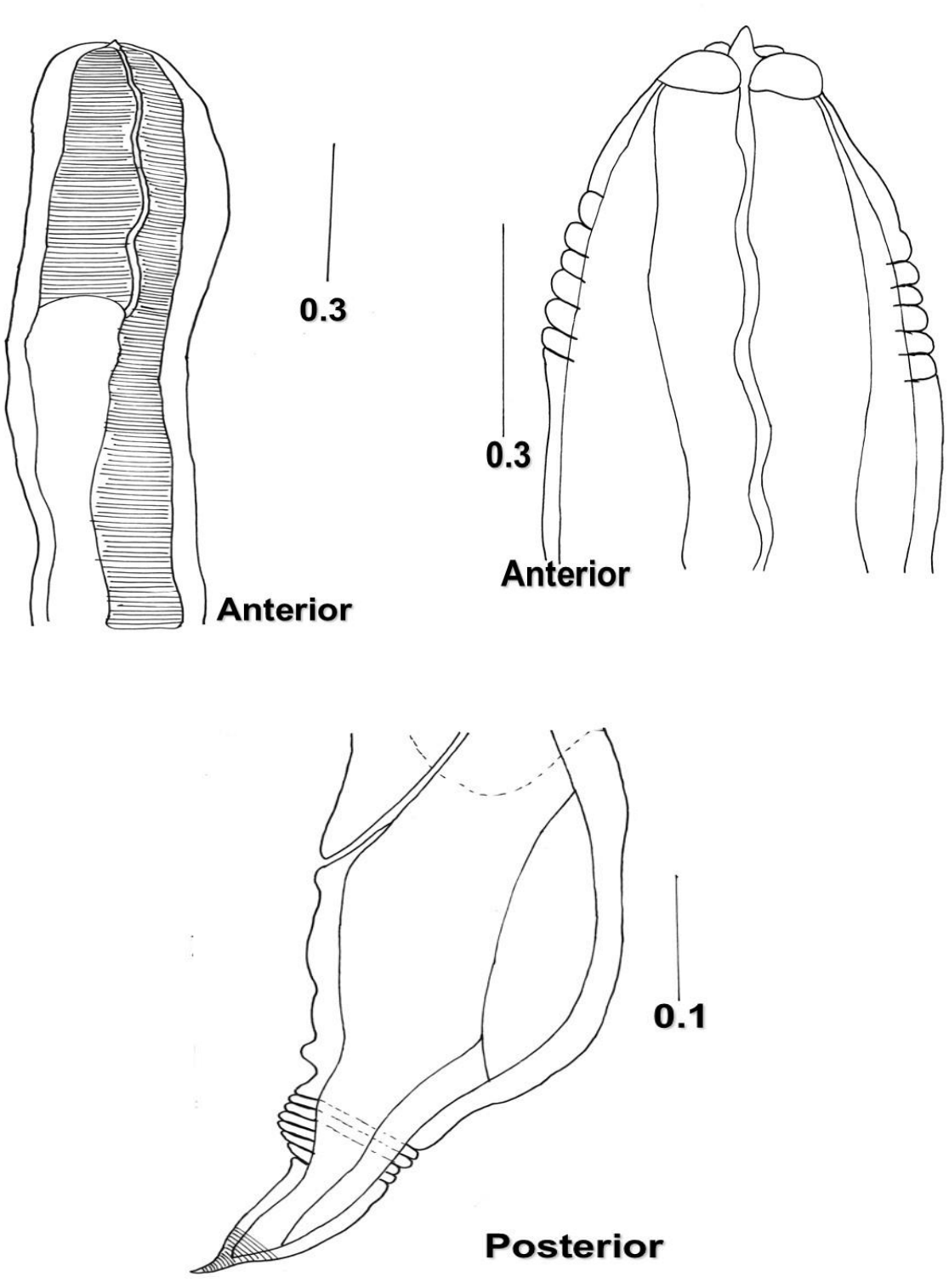

Fig. 1. *Hysterothylacium carangis.* Diagrams of anterior and posterior end of female worm.

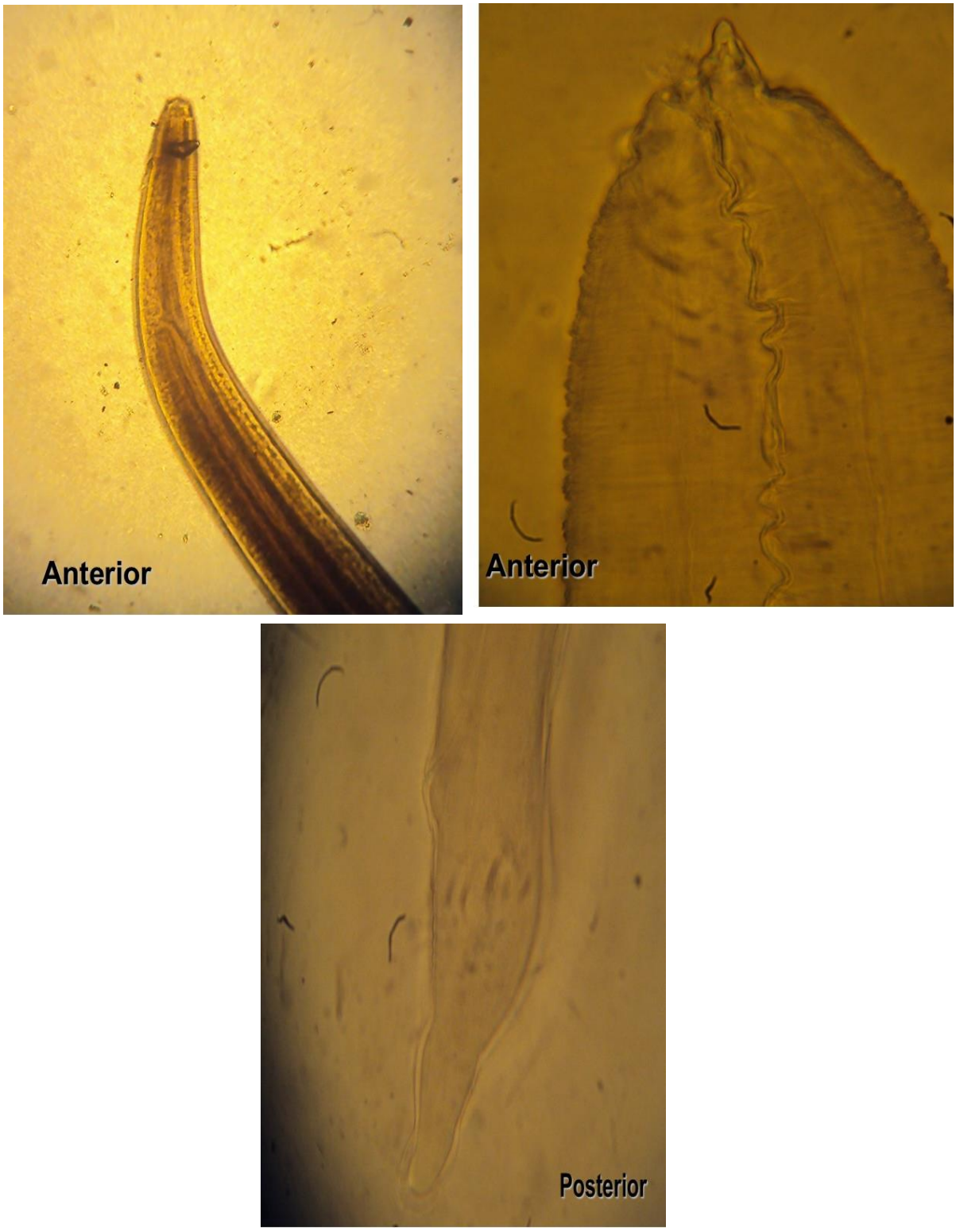

Fig. 2. *Hysterothylacium carangis.* Photographs of anterior and posterior end of female worm.

Discussion

Genus *Hysterothylacium* Ward and Magath (1917) comprises more than 50 species, which are parasites of worldwide fishes Deardorff and Overstreet (1980). Present species compare with previously reported species in detail.

H. incurvum Rud, (1819) and Deardorff and Overstreet (1980) collected from stomach of fishes *Xiphias gladius* and *Istiophorus gladius* of Srilanka and India differs from present species in having larger in length; head with lips having margins and hinder portion bear cuticle flanges; cervical alae and cervical papillae present; nerve ring encircle anterior end of esophagus; tail straight pointed.

H. plagiostomorum Linstow (1905) collected from stomach and gills of fish *Catorhinus maximus* and *Raja radiate* of Sri-Lanka differs from present species in having smaller in length; lips short; each with rounded projection and two teeth at apex; cervical papillae present; tail with appendages.

H. synpapillus Bilqees *et al*. (1971) collected from intestine of fish *Muraenesox cinereus* of Pakistan; differs from present species in having larger; lips with dentigerous linings at its junction with esophagus; tail pointed.

H. winteri Torres and Soto (2004) collected from intestine of fish *Eleginops maclovinus* of Chile differs from present species in having each subventral lips with a pair, one single papillae and one amphid; lips with cuticle flanges on lateral margins and interlabia; tail conical and tip covered with spines and a pair of phasmid.

H. shamimi Gupta and Begum (2007) collected from intestine of fish *Saurus indicus* of India differs from present species in having smaller in length; each subventral lip anteriorly turn into two semilunar structures; interlabia and lip pulp present; each lip with a pair of papillae; vulva postequatorial.

H. vinodae Gupta and Begum (2007) collected from intestine of fish *Saurus indicus* of India differs from present species in having smaller in length; each subventral lip anteriorly turn into two semilunar structures; interlabia and lip pulp present; each lip with a pair of papillae; vulva postequatorial.

H. eurycheilum Olsen (1952) collected from stomach and intestine of fish *Epinephelus itajora* of Anguilla differs from present species in having larger in length; lips with cuticle flanges on lateral margins; each subventral lips with a pair, one single papillae and one amphid; tail without any ornamention.

H. aetobatum Lakshum (2005) collected from intestine of fish *Aetobatus narinari* of India differs from present species in having smaller in length; smooth cuticle; esophagus divide into two parts; vulva equatorial.

H. adumcum Rudolphi (1802) collected from stomach and intestine of fish *Dissosticlus eleginoides* of South Goergia differs from present species in having cervical alae present; tail conical with small projections and covered with spines.

But present worms have close resemblance with *Hysterothylacium carangis* Kalyankar (1971) collected from intestine of fish *Carangoides malabaricus* in all morphometric characteristics and identified as such. Previously species of the genus *Hysterothylacium* Ward and Magath in (1917) have been reported from host fishes including, *Carangoides malabaricus, Xiphias gladius, Istiophorus gladiu, Catorhinus maximus, Serranus ferio, Muraenesox cinereus, Eleginops maclovinus, Saurus indicus, Epinephelus itajora, Aetobatus narinari* and *Dissosticlus eleginoides.* However presently this genus is being reported for the first time from the new host *Wallago attu* of Indus River Jamshoro, Sindh, Pakistan.

Conflict of Interest

The authors declare no conflict of interest.

References

Ahmad, N., Ayaz, S., Shams, S. and Karimullah. 2014. Prevalence and Morphology of Helminth Parasites of Fish from River Swat, Khyber Pakhtunkhwa. Pakistan Journal of Agricultural Research **2:** 142-148.

Ayaz, S., Khan, M.A., Rehman, I.U., Anwar, M., Saeed, S. and Zarin, S. 2013. Prevalence of endoparasites in fresh water fishes in River Punjkorha, Khyber Pukhtunkhwa Pakistan. International Journal of Biology Pharmacy and Allied Sciences **2:** 111-115.

Bilqees, F.M., Khanum, Z. and Jehan, Q. 1971. Marine fish nematodes of West Pakistan I. Description of seven new species of Karachi coast. Journal of Science Karachi **1(1):** 175·184.

Deardroff, T.L. and Overstreet, R.M. 1980. Review of *HYsterotkylacium* and *Iheringascaris* (both *previously=Thynnascaris)* (Nematoda: Anisakidae) from the northern Gulf of Mexico. Proceeding of Bioscience and Zoological Socity Washington **4:** 1035-1079.

Gupta, P. C. and Begum, I. 2007. Two new anisakid nematode from marine fish, *Saurus indicus* (day) at India. Bioscience Research **4:** 06-14.

Kalyankar, S.D. 1971. *Thynnascaris carangis* sp. n., a new nematode (Nematoda, Stomachidae, Raphidascaridinae) from an Indian fish *Oaranx malabaricus* Day. Acta parasitologia **19:** 147-150.

Kalyankar,, S.D. 1972. A report on *Tkynnascaris inquies* (Linton, 1901) Rasheed, 1965 from India (Ascarididae: Stomachidae). Marathwada University Journal **4:** 95-98.

Kalyankar, S.D. 1972. On some interesting nematodes of fishes from India. Rivista de Parassitologia **4:** 281-288.

Kakar, A. and Bilqees, F.M. 2008. *Rhabdochona magnavesicula* new species (Nematoda: Rhabdochonidae) from the fish *Schizocyprus brucei* Regan, 1914 of River Loni, Musakhel, Balochistan, Pakistan. Proceedings of Parasitology **46:** 49-65.

Khanum, H., Ferdows, J. and Farhana, R. 2008. Community of Helminth Parasites in *Rita rita* (Hamilton Buchanun). Journal of Bio-Science **16:** 133-135.

Lakshmi, I. R. 2005. A new nematode *Hysterothylacium aetobatum* from ray fish, *Aetobatus narinari* (Euphrasen). Parasitología Americana **60:** 170 – 173.

Navone, G. T., Sardella, N. H. and Timi, J. T. 1998. Larvae and adult of *Hyterothylacium aduncum* (Rudolphi, 1802) (Nematoda: Anisakidae) in fishes and crustaceans in the South West Atlantic. Parasite-Journal **5:** 127-136.

Nelson, J. S. 2006. Fishes of the World. John Wiley and Sons, ISBN, **4:**7-71.

Nawaz, H., Sharif, M.H. and Mirza, M. R. 1994. Food of the singhari, *Aorichthys aor sarwari* (Pisces: Bagridae). Biologia **40 (1-2):** 103-107.

Rocka, A. 2004. Nematodes of the Antarctic fishes. Polish Polar Research **25(2):** 135–152.

Soota, T.D. 1983. Studies on nematodes of Indian vertebrates I. fishes. Zoological survey of India **54:** 102-109.

Shakir, H. A. and Khan, A. M. 2006. The Prevalence of Cestode Infection in a Freshwater Catfis, *Sperata Sarwari*, Department of Zoology Punjub University, Lahore, Pakistan. Punjab University Journal Zoology **21:** 41-47.

Soofi, H., Birmani, N. A and Bhutto, A. 2016c. New species of genus *Sphincterostoma* Yamaguti, 1937 reported from Bagridae (Bleeker, 1858) catfish *Rita rita* (Siluriformes: Bagridae) of River Indus at District Jamshoro, Sindh, Pakistan. International Journal of Advanced Research **4(9):** 1358-1362.

Soofi, H., Birmani, N. A., Dharejo, A. M. and Abbasi, A. R. 2015. First record of genus *Thaparotrema* Gupta, 1955 (Trematoda: Ophisthorchiidae) in Pakistan. Journal of Entomology and Zoology Studies **3(6):** 232-234.

Soofi H., Birmani, N. A., Dharejo, A. M. and Bhutto, A. 2016e. Description of new species *Witenbergia mystusi* of genus *Witenbergia* Vaz, 1932 from River Indus catfish *Mystus cavasius* (Hamilton, 1822) Sindh, Pakistan. International Journal of Innovative and Applied Research **4(9):** 21-25.

Soofi, H., Birmani, N. A. and Dharejo, A. M. 2016a. *Dendrorchis ritata* n.sp. (Trematoda: Gorgoderidae) from catfish *Rita rita* (Siluriformes: Bagridae) of Jamshoro district, Sindh, Pakistan. International Journal of Fauna and Biological Studies **3(3):** 17-19.

Soofi, H., Birmani, N. A. and Dharejo, A. M. 2016b. The first record of (Nematoda: Camallanidae) genus *Onchocamallanus* Petter, 1979 from Sindh province of Pakistan. Journal of Entomology and Zoology *Studies* **4(5):** 851-853.

Soofi, H., Birmani, N. A. and Dharejo, A. M. 2016d. *Thaparotrema Shamimi* new species in catfish *Rita rita* (Hamilton, 1822) from Jamshoro district Sindh, Pakistan. International Journal of Advanced Research in Biological Sciences **3(9):** 124-129.

Soofi, H., Birmani, N. A. and Dharejo, A. M. 2017. The first record of genus *Pseudophyllodistomum* Cribb, 1987 from Siluriform catfish *Mystus cavasius* (Hamilton,

1822) of River Indus Sindh, Pakistan. Journal of Entomology and Zoology Studies **5(1):** 209-211.

Thomas, L., Dearoff and Overstreet R.M. 1981. *Raphidascaris camments* sp. n., *Hysterothylacium eurycheilum* (Olsen) Comb. N., and Comments on *Heterotyphlum spaul* (Nematoda: Ascaridoidea) in marine fishes. Journal of Parasitology **67(3):** 426-432.

Torres, P. and Soto, M.S. 2004. *Hyterothylacium winteri* sp. n. (Nematoda: Anisakidae), a parasite of Chilean rock cod, *Eleginops maclovinus* (Perciformes: Eleginopidae), from South Chile. Folia Parasitologica **51:** 55–60.

Ward, H.B. and Magth, T.B. 1917. Notes on some nematodes from freshwater fishes. Journal of Parasitology **3(2):** 57-64.