

**PALLISENTIS PAKISTANENSIS SP.N. (ACANTHOCEPHALIAN: QUADRIGYRIDAE VAN CLEAVE, 1920) RECOVERED FROM FRESHWATER FISH *CHANNA STRIATUS*, NAUSHAHRO FEROZE, SINDH, PAKISTAN**

**Sanjota Nirmal Das, Tasmina Leghari and Abdul Saeed Hulio**

Department of Zoology, University of Sindh, Jamshoro -76080, Pakistan

Correspondence address: drsanjota2@gmail.com

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**ABSTRACT**

The new species *Pallisentis pakistanensis* is recovered from the intestine of freshwater fish *Channa striatus* from Naushahro Feroze, Sindh, Pakistan. *Pallisentis pakistanensis* sp.n is morphological different from other species of Genus *Pallisentis* Van cleave, 1928 by having short globular proboscis with four (4) rows each contain eight (8) hooks. Twelve (12) rows of collar spines and twenty five (25) rows of trunk spines. Lemnisci of equal size. Single cement gland with strictly twelve (12) nuclei. Two (2) cylindrical testes, anterior slightly larger than posterior testis. Uterine bell is funnel shaped, eggs are oval in shape. This is the first record of the genus *Pallisentis* Van Cleave, 1928 from new locality Naushahro Feroze, Sindh, Pakistan.

**Key-words:** *Pallisentis pakistanensis* sp.n. *Channa striatus*, Naushahro feroze, Sindh, Pakistan.

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**INTRODUCTION**

The Acanthocephalans commonly called as spiny-headed worms or thorny-headed worms, they possess proboscis armed with spines which is used for penetration into host. Acanthocephalan usually recovered from the intestine of fishes. *Pallisentis* Van cleave, 1928 is a genus of acanthocephalan parasites, introduced by Van Cleave in 1928 with type species *Pallisentis umbellatus* Van Cleave, 1928. It belongs to the family Quadrigyridae Van Cleave, 1920 and sub-family Pallisentinae Van Cleave (1928) Harada 1935.

Species of the genus *Pallisentis* Van Cleave, 1928 usually parasitize the freshwater fishes belongs to family Channidae. *Channa striatus* is common example of freshwater fish belongs to family Channidae and commonly called as snakehead fish. This species is found in all over South and Southeast Asia, living in ponds, lakes, rivers, and marshes, among other aquatic habitats. *Channa striatus* of Asia is native to many different types of freshwater environments including those found in Bangladesh, Pakistan, India, Malaysia, Indonesia and Thailand.

Present species *Pallisentis pakistanensis* sp.n. is recovered from the intestine of freshwater fish host *Channa striatus* from Naushahro Feroze, Sindh Pakistan.

**MATERIAL AND METHOD**

During the survey freshwater fish host *Channa striatus* were collected from Naushahro feroze, Sindh, Pakistan for the examination of helminth parasites. Fish hosts were carried to the Parasitological Laboratory, Department of Zoology, University of Sindh, Jamshoro, Pakistan. Hosts were dissected and isolated various organs in petri dishes filled with saline water and examined under microscope, during examination twenty three (23) specimens, seven (7) males and sixteen (16) females belongs to Acanthocephalan genus *Pallisentis* Van Cleave, 1928 were found from six (6) infected hosts *Channa striatus*. Collected specimens were fixed in alcohol, Mayer's carmalum stain is used for staining and dehydrated in ethanol series, clove oil is used for clearing purpose then specimens were rinsed with xylene and permanently mounted in Canada balsam. Camera Lucida were used for line drawings, measurements were taken in mm. Specimens are placed in Parasitology Laboratory, Department of Zoology, University of Sindh, Jamshoro.

**RESULTS**

***Pallisentis pakistanensis* sp.n.  
(Figs 1-5)**

Host:	<i>Channa striatus</i>
Location:	Intestine
Locality:	Naushahro Feroze

No. of specimens recovered: seven (7) males and sixteen (16) females

Hosts examined/infected: 14/11

### Description:

Description is based on seven (7) males and sixteen (16) females mature specimens.

### Male:

General body structure is creamy white, spinous and cylindrical in shape. Male body is smaller in size than the female measuring 8.95-12.88 by 0.832-0.93. Short globular sac like proboscis measures 0.18-0.19 by 0.25-0.29, proboscis have four (4) transverse rows, each row contain eight (8) hooks, proboscis hooks are broadened at base and pointed at the tips. Base of each hook are protected by cuticle and insert inside the tissue. Apex hooks are the largest measures 0.094-0.096 by 0.028-0.032, while the hooks of second, third and fourth become progressively smaller measure 0.086-0.089 by 0.014-0.018, 0.071-0.074 by 0.011-0.015 and 0.053-0.058 by 0.01-0.013 respectively. Neck is short prominent measure 0.351-0.37 by 0.32-0.31. The collar spines contain twelve (12) rows each bearing sixteen (16) spines and these spines are arranged in circular manner while the trunk spines consist of twenty five (25) rows each bearing 16-17 spines. There is spineless area between collar and body spines which measures 0.10 mm. Elliptical sac single walled proboscis receptacle measures 0.663-0.676 by 0.351-0.429. At the base of proboscis two equal tubular lemnisci are present and hangs into pseudocoel, and measure 1.95-1.97 by 0.0068-0.069. Two cylindrical shaped testes are present, anterior testis measures 1.11- 1.12 by 0.24-0.25, while the posterior testis measures 1.14-1.16 by 0.26-0.26 in size.

Cement gland is syncytial contain twelve (12) nuclei and elongated in shape measures 1.76-2.76 by 0.24-0.28. Cement reservoir is cylindrical in shape and measuring 1.09-1.32 by 0.24-0.41. The seminal vesicle varies from 0.78-1.19 by 0.19-0.24. Saeftigen's pouch is present specimens measures 0.51-0.9 by 0.20-0.35. Copulatory bursa is retractile and measure 0.35-0.62 by 0.247-0.416.

### Female:

The body of female is larger than male, cylindrical and tubular in shape. It measures 13.15-13.7 by 0.689-0.858. Short proboscis measures 0.20-0.25 by 0.21-0.35, hooks of the proboscis are same shape and number to that of male. The first row of the proboscis hooks are largest measure single layered proboscis sheath measure 0.676-0.753 by 0.299-0.338. The neck is short and measures 0.33-0.35 by 0.33-0.32. Two equal lemnisci are present within body cavity measures 1.67-1.89- by 0.092-0.096. Ovarian balls measures 0.13-0.14 by 0.65-0.72. Funnel shaped uterine bell measures 0.312 by 0.117 and opens into uterus measures 0.097 by 0.032. Vagina measures 0.097-0.074 and surrounded by muscle sphincter. Posterior region rounded with a small genital pore at terminal ends. Body cavity of mature female specimens is filled with eggs, eggs are oval in shape and measuring 0.078-0.079 by 0.024-0.021.

### DISCUSSION

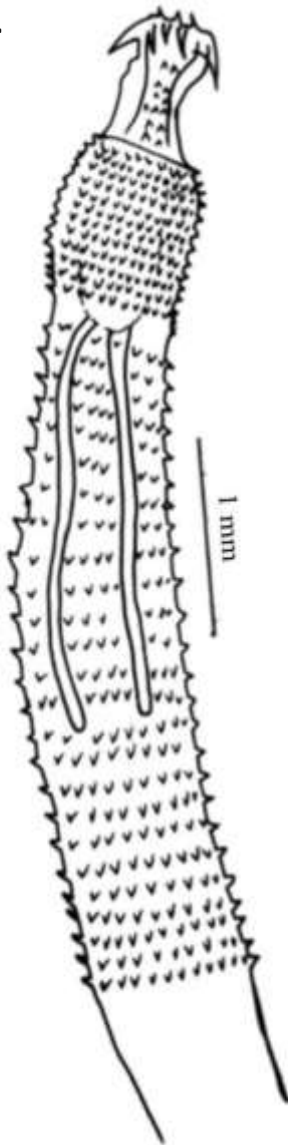
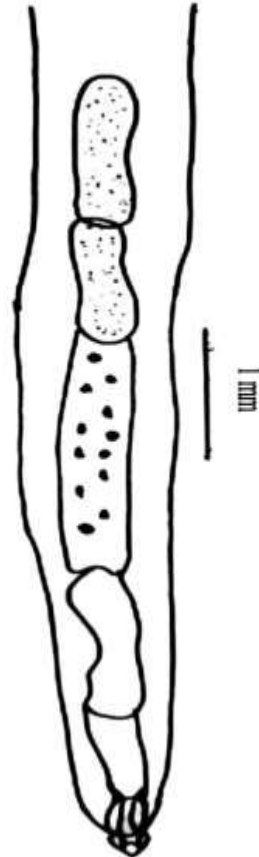
Almost five (5) species of Genus *Pallisentis* Van Cleave 1928 have been found in Pakistan which includes, *Pallisentis ophiocephali* Thapar 1930, Bilqees *et al.*, 1971 from *Channa striatus*, *P. kalriai* Khan and Bilqees, 1985 from the host *Labeo rohita*, *P. magnum* Saeed and Bilqees, 1971 recovered from the host *Wallago attu*, *P. sindhensis* Bilqees and Khan, 1987 recorded from *Channa striatus*, *P. munifi* Naqvi *et al.*, 2015 recovered from *Cirrhinu mrigala*. Present specimens are recovered from the intestine of *Channa striatus*. Present specimens are compared with other species of genus *Pallisentis*.

Present specimens are different from *P. munifi* Naqvi *et al.*, 2015 by having four (4) circles of eight (8) spines each on proboscis, while the proboscis of *P. munifi* possess four (4) circles of six (6) spines each. Collar spines of present specimens contain twelve (12) rows and body spines comprises of twenty five (25) rows, whereas *P. munifi* contains fourteen to fifteen (14-15) rows of collar spines and fifty four to fifty six (54-56) rows of body or trunk spines. Lemnisci of *P. munifi* is unequal while present specimens have equal lemnisci

Present specimens are larger in size as compared to *P. kalriai* Khan and Bilqees, 1985 size mentioned in table. The size proboscis is also larger as compared to *P. kalriai*. Proboscis of present specimens contains four (4) circles of eight (8) spines each, while *P. kalriai* bears four (4) rows of ten (10) spines each. The size of proboscis hooks are also dissimilar. Recovered specimens contain twenty five (25) rows of trunk spines while *P. kalriai* contains fifteen (15) rows of trunk spines. The egg size of present specimens is also larger as compared to *P. kalriai* mentioned in (Table 1).

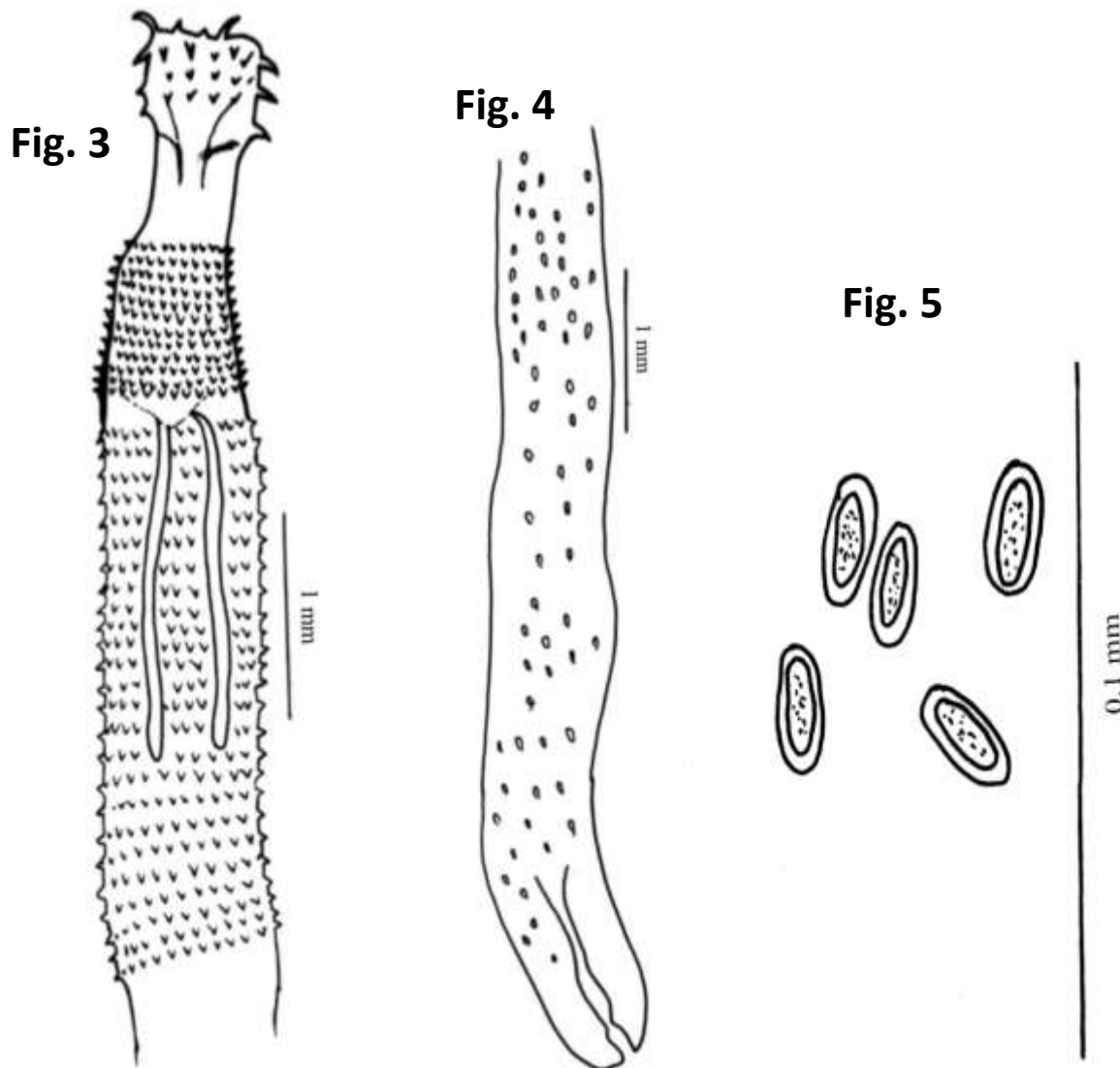
**Table 1. Morphometric characteristic of present species with other recorded species of genus *Pallisentis* Van Cleave, 1928.**

Species	Present specimens	<i>P. ophiocephali</i> apar,1930	<i>P. kalriai</i> Khan and Bilqees, 1985	<i>P. munifi</i> Naqvi <i>et al.</i> ,2015
Host	<i>Channa striatus</i>	<i>Channa marulius</i>	<i>Labeo rohita</i>	<i>Cirrhinus mrigala</i>
Location	Naushahro Feroze	Different places of India	Kalri lake, Sindh Pakistan	Kalri lake, Sindh Pakistan
Size of Body (LxW)	♂ 8.95-12.88 x 0.832-0.93 ♀ 13.15-13.7 by 0.689-0.858.	♂ 05.99 x 0.34 ♀ 14.3 x 0.495	♂ 8.90-10.57x 0.57-0.58 ♀ 12.03-12.31x 0.52-0.53	♂ 6.45-7.09x 0.38-0.42 ♀ 7.20-7.36x 0.39-0.42
Proboscis size	♂ 0.18-0.19 by 0.25-0.29 ♀ 0.20-0.25 by 0.21-0.35	♂ 0.14 x 0.22 ♀ .175 x 0.242	♂ 0.099-0.116 x 0.23-0.27 ♀ 0.16-0.21x 0.16-0.33	♂ 0.15x0.15-0.16 ♀ 0.15-0.17x 0.16
Length of neck	♂ 0.351-0.37 by 0.32-0.31 ♀ 0.33-0.35 by 0.33-0.32	♂ 0.198 x 0.22 0.308 x 0.22	♂ 0.29-0.33 x 0.18-0.26 ♀ 0.265-0.315 x 0.232-0.238	♂ 0.10–0.19 by 0.10– 0.15 ♀ 0.195–0.25 by 0.105– 0.151
Proboscis hooks length H1	♂0.094-0.096 x 0.028-0.032 ♀ same as ♂	0.076–0.085	0.076-0.091 x 0.012-0.026	♂ 0.083–0.087 x 0.0228– 0.0247 ♀ same as ♂
H2	♂ 0.086-0.089 by 0.014-0.018 ♀ same as male	0.068–0.076	–	♂ 0.0646–0.0808 x 0.0076–0.0091 ♀ same as male
H3	♂ 0.071-0.074 by 0.011-0.015 ♀ same as ♂	0.051	–	♂ 0.046 by 0.0076–0.0079 ♀ same as male
H4	♂ 0.053-0.058 by 0.01-0.013 ♀ same as male	0.034–0.0425	–	♂ 0.0301 by 0.0068– 0.0076 ♀ same as male
Lemnisci	♂ 1.67-1.89- by 0.092-0.096	1.925	♂ 1.228-1.906 x 0.060-0.066	♂ 0.93–0.96 by 0.063 ♀ 0.75 by 0.06–0.07
Testes	1(1.11- 1.12 x 0.24-0.25) 2(1.14-1.16 x 0.26-0.26)	0.605–0.66	1.17-1.19 x 0.26-0.27	1(0.78 by 0.89 by 0.15– 0.16) 2(0.84–0.86 by 0.15– 0.16)
Cement gland	1.76-2.76 x0.24-0.28		1.66-2.58x 0.19-0.23	0.60 by 0.19–0.21.
Eggs	0.078-0.079x0.024-0.021	0.068x0.02	0.032-0.036x0.012-0.016	0.045-0.068x0.024-0.028

**Fig 1****Fig 2**

**Fig. 1.** *Pallisentis pakistanensis* n.sp. Line drawing of anterior region of male  
Scale bar: 1 mm

**Fig. 2.** *Pallisentis pakistanensis* n.sp. Line drawing of posterior region of male  
Scale bar: 1 mm



**Fig. 3.** *Pallisentis pakistanensis* sp.n. Line drawing of anterior region of paratype  
Scale bar: 1mm

**Fig. 4.** *Pallisentis pakistanensis* sp.n. Line drawing of posterior region of paratype.  
Scale bar: 1mm

**Fig. 5.** *Pallisentis pakistanensis* sp.n. Line drawing of enlarged eggs  
Scale bar: 0.1 mm

The proboscis size of present specimens measures 0.18-0.19 by 0.25-0.29 which is smaller than *P. magnum* Saeed and Bilqees, 1971 which measures 0.28-0.32 by 0.16-0.20. Testes size of present specimens measures 1.11-1.12 by 0.24-0.25, while *P. magnum* measures 0.40-0.80.

Present specimens are also different from the species *P. channai* Gupta *et al.*, 2015. Present specimens bear larger body size as compare to *P. channai*. Proboscis of present specimens contains four (4) circles of eight (8) hooks each, while *P. channai* contain four (4) circles of ten (10) hooks each. Present specimens contain twelve (12) rows of collar spines and 25 rows of trunk or body spines while collar spines of *P. channai* contains sixteen (16) rows and body spines comprises of twenty one (21) rows. The cement gland of present species is elongated with twelve (12) nuclei, while *P. channai* contain cylindrical cement gland with eighteen (18) nuclei.

Present specimens are also compared with *P. punctati* Neelima *et al.*, 2015. The body size and size of proboscis of present specimens are larger than *P. punctati*. Proboscis of *P. punctati* contain four (4) rows with ten (10) hooks each while the present species contain four (4) circles of eight (8) hooks each. Collar spines of present specimens contain twelve (12) rows and trunk spines bear twenty five (25) rows, while *P. punctati* contain sixteen (16) rows of collar spines and 20-26 rows of body spines. The cement gland of present specimens contain twelve (12) nuclei while the cement gland of *P. punctati* contain ten to eleven (10-11) nuclei.

The present specimens are differ from other species of the Genus *Pallisentis* Van Cleave (1928) in body size, size of proboscis, proboscis hooks number, Rows number of collar spines and body spines, and the spinelss space between collar spines and trunk spines is also very narrow as compared to other species, present specimens also differ from other species by having elongated cement gland with twelve (12) nuclei. Due to all differences the present species are regarded as new with name *Pallisentis pakistanensis* sp.n. The species is named on locality of host Country, Pakistan.

## CONCLUSION

A newly identified species of the genus *Pallisentis* Van cleave, 1928 known as *Pallisentis pakistanensis* sp.n., appears different from species reported globally and within Pakistan, therefore this species is proposed to be new and this also marks the new locality Naushahro Feroze, Sindh, Pakistan.

## ACKNOWLEDGEMENTS

The authors express their gratitude to their research colleagues and the staff of the parasitological Laboratory for their invaluable assistance and support.

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(Accepted for publication June 2024)