Pakistan J. Zool., vol. 36(2), pp. 139-142, 2004.

Two New Species of Genus *Mediorhynchus* Van Cleave, 1916 from Birds of Karachi

ALY KHAN, FATIMA MUJIB BILQEES AND MUTI-UR-REHMAN

Crop Diseases Research Institute, PARC, University of Karachi, Karachi-75270 (AK), Department of Parasitology, Faculty of Health Sciences, Baqai Medical University, Karachi-74600 (FMB) and Pakistan Ship Owners, Govt. College, North Nazimabad, Karachi-74700, Pakistan (MR)

Abstract.- Two new species of *Mediorhynchus* Van Cleave, 1916 *viz*., *M. fatimaae* in Eagle (*Burastur teesa*) and *M. nickoli* in Kite (*Milvus migrans migrans*) have been discovered. *M. fatimaae*, new species is distinguished mainly by a unique proboscis armature 10-12 longitudinal rows having 7-8 hooks and 10 longitudinal rows having 7-8 spines and eggs measuring 0.041-0.045 by 0.015-0.018. *M. nickoli* n.sp., possesses 10 longitudinal rows having 7-8 hooks and six longitudinal rows having 6-8 spines and eggs measuring 0.046-0.051 by 0.0076-0.015. This is the first record of *Mediorhynchus* from Pakistan.

Keywords: Birds, *Mediorhynchus*, Karachi, Pakistan.

INTRODUCTION

Although literature on acanthocephalan parasites of birds is fairly extensive, only few reports about these worms from birds are available in Pakistan (Khan and Bilqees, 1998; Khan *et al*., 2001, 2002). In the present paper two new species of Acanthocephala are described, which are new to science.

MATERIALS AND METHODS

The acanthocephala were fixed in FAA (formalin, acetic acid and 50, ethanol 5:3:92) for 24 hours. The species for whole mounts were stained in Mayer's carmalum, dehydrated in graded series of alcohols, cleared in clove oil, and mounted in Canada balsam. Diagrams were made with the aid of camera lucida. The measurements in the text are given in millimeters. Photomicrographs of the specimens were taken using an automatic photographic camera, mounted on a research microscope Nikon optiphot-2. Specimens are in possession of the first author of CDRI, PARC, University of Karachi, Karachi-75270.

Mediorhynchus fatimaae, new species
(Fig. 1)

Host	Eagle (*Butastur teesa* Franklin)
Location	Karachi, Sindh, Pakistan
No. of hosts examined	10
No. of specimens recovered	4 male, 8 female from one host.

0030-9923/2004/0002-0139 $ 4.00/0

Fig. 1(A-E). *Mediorhynchus fatimaae* new species, A, Proboscis region; B, posterior regions of male; C, hooks; D, spines; E, eggs.

Description

With characters of the genus *Mediorhynchus*. Body elongate with slight pseudo-segmentation. Pronounced sexual dimorphism in body size. Main lacunar canal with regular branches. Proboscis truncate divided into two parts. Protoboscis having 10-12 rows of hooks each row having 6-8 hooks measuring 0.043-0.045 by 0.0057-0.0083. Teloboscis having 10 row of spines, each row

having 7-8 spines measuring 0.022-0.043 by 0.0038-0.0045. Proboscis armature similar in both sexes, lemnisci long, slender, usually slightly sub-equal in length. Genital pore terminal in both sexes.

Male

22.8-22.6 long, 1.04-1.52 greatest width. Proboscis 0.64-0.92 by 0.32-0.42. Neck small measuring 0.02-0.08 by 0.44-0.62 at the base. Proboscis receptacle 1.20-1.32 by 0.24-0.32. Lemnisci 2.12-2.24 by 0.24-0.36. Distance between lemnisci and anterior testis 2.60-4.10. Anterior testis 0.76-0.86 by 0.26-0.28. Posterior testis 0.80-0.84 by 0.36. Distance between the testis 0.8-1.04. Eight cement glands present, posterior to the testes. Bursa measuring 2.72 by 0.72.

Female

34.16-43.56 long, 1.2-1.6 greatest width. Proboscis 0.48-0.72 by 0.30-0.32. Neck short 0.2-0.4 by 0.24-0.28. Proboscis receptacle 1.04-1.44 by 0.20-0.24. Lemnisci measuring 2.12-2.40 by 0.16-0.44. Ovarian balls numerous measuring 1.0-1.04 by 0.5-1. Uterine bell measure 2.2-2.6 by 0.16-0.20. Eggs elongate without polar prolongations measuring 0.041-0.045 by 0.015-0.018.

Discussion

The males is present specimens are longer (22.8-22.6) in size as compared to *M. armenicum* Petrotschenko, 1958 (5.8-9.11); *M. emberizae* (Rud. 1819) (6-8); *M. grande* (Van Cleave, 1916) (8); *M. micracantus* (Rud. 1819) (20); *M. orientale* (Belopolskaja, 1913) (5.1); *M. robustum* Van Cleave, 1916 (7); *M. tenuis* Meyer, 1931 (12); *M. wardi* Schmidt et Canaris, 1967 (11-15); *M. leptis* Ward, 1966 (6-8) and *M. kuntzi* (Ward, 1960) (15-18). Similarly the females are longer (34.16-43.56 by 1.2-1.6) as compared to *M. giganeteus* Meyer, 1931 (11); *M. tenuis* Meyer, 1931 (30-33); *M. kuntzi* (16-20); *M. leptis* Ward, 1966 (6); *M. micracanthus* (20); *M. mirabile* de Marval, 1905 (16-29); *M. murtense* Lundstrom, 1942 (32); *M. orientale* (18); *M. robustum* (16); *M. sipocontense* Tubangui, 1935 (12.5) and *M. zosteropis* Porta, 1913 (12-13).

The present species differs from *M. papillosum* Van Cleave, 1916 which has 18 longitudinal rows of hooks in Protoboscis; *M. armenicum* (9 rows); *M. empodius* Skrjain, 1913 (14 rows); *M. gallinarum* (Bhalero, 1937) Van Cleave, 1947 (18 rows); *M. micracanthus* (18 rows); *M. murtense* (20 rows); *M. orientale* (16-18 rows); *M. taeniatum* (Linstow, 1901) (6 rows); *M. giganteus* (8 rows); *M. meiringi* Bisseru, 1960 (14-15 rows); *M. wardi* (24-26 rows); *M. leptis* (18 rows); *M. selengensis* Harris, 1973 (20-22 rows); *M. leptis* (18 rows); *M. selengensis* Harris, 1973 (20-22 rows) and *M. centurosum* (22-24 rows). The Teloboscis has 10 rows of spines while in *M. centurorum* Nickol, 1969 (22-24 rows); *M. selegensis* (26-30 rows); *M. giganteus* (20 rows); *M. numidae* (Baer, 1925) (32 rows); *M. tenius* (25 rows); *M. taeniatus* (12 rows); *M. kuntzi* (20-22 rows); *M. wardi* (40 rows); *M. leptis* (26 rows); *M. zosteropis* Porta, 1913 (12 rows); *M. vaginatum* Desing, 1851 (7-8 rows); *M. pintol* (18 rows); *M. oswaldocruzi* Travassos, 1923 (20 rows); *M. orientale* (28 rows); *M. murtense* (20 rows); *M. miraile* (32 rows); *M. nickoli* (6 rows); *M. armenicum* (14 rows); *M. colini* Webster, 1948 (40 rows); *M. corcoracis* Johnston et Edmonds, 1951 (12 rows); *M. empodius* (26 rows) and *M. micracanthus* (16 rows).

According to all these above-mentioned differences the present specimens seem to represent a new species and Karachi, Pakistan is previously unknown locality for any species of *Mediorhynchus*. The species is named in honour of (Late) Dr. Haseen Fatima, Department of Zoology, University of Karachi.

Mediorhynchus nickoll, new species
(Fig. 2)

Host	Kite (*Milvus migrans migrans* Boddart)
Location	Karachi, Sindh, Pakistan
Locality	Intestine
No. of hosts examined	8
No. of specimens recovered	3 mae, 6 female from one host

Description

Elongate Acanthocephala with slight pseudo-segmentation. Body size unequal from one specimen to another but sexual dimorphism pronounced. Proboscis armature similar in both sexes truncated into two parts. Protoboscis having 10 longitudinal rows of hooks each row havng 7-8

hooks measuring 0.055-0.057 by 0.01-0.015, teloboscis with 7 rows of spines, each row having 6-8 spines measuring 0.027-0.028 by 0.0076-0.011. Cephalic ganglion located in the anterior one third of proboscis receptacle.

Fig. 2. *Mediorhynchus nickoli,* new species, A, proboscis region; B, posterior region of male; C, posterior region of female; D, hooks, E, spines; F, eggs.

Male

Body long 10.8-15.2 by 1.04-1.44. Proboscis truncate 0.52-0.60 by 0.40-0.42. Neck small measuring 0.016-0.040 by 0.020-0.036. Proboscis receptacle 0.35-1.6 by 0.28-0.40. Lemnisci long measuring 0.64-0.88 by 0.40-0.72. Testis anterior measuring 0.88-1.2 by 0.40-0.64. Testis posterior measuring 0.64-1.12 by 0.64-0.72. Saefftigen's pouch 0.48 by 0.16. Cement gland eight, cement reservoir small 1.84 by 0.16-0.18. Bursa 1.12-1.4 by 0.36-0.72.

Female

Body measuring 15.6-22.0 by 1.20-1.60. Proboscis 0.52-1.00 by 0.40-1.00. Neck 0.20-0.28 by 0.16-0.40. Proboscis receptacle 1.40-1.86 by 0.36-0.38. Lemnisci 2.58-2.80 by 0.34-0.40. Mature eggs measure 0.046-0.051 by 0.0076-0.015.

Discussion

Species of *Mediorhynchus* Van Cleave, 1916 are common parasites of birds around the world. A number of species have been reported from N. America, S. America, Africa, Europe, Australia and India. Due to peculiarities of proboscis hooks and spines arrangement have led of several misinterpretations in literature. Also, earlier workers have been inconsistent in their form of description; with the result that today it is difficult or impossible to identify many species (Schmidt and Kunz, 1977). The present authors are in agreement with Schmidt and Kunz (1977) that there should be a consistent method of describing hook arrangement in longitudinal rows, besides other characters such as body size, lemnisci length, position of testes, egg size etc.

In the agreement of proboscis hooks and spines the present species differs from all the species reported, as compared to the other species *M. fatimaae* reported from Karachi, Pakistan, the present species has 6 longitudinal rows in Teleproboscis while the former has 10 longitudinal rows of spines besides having different egg size. The length of eggs in the present specimen (0.046-0.051) is smaller as compared to *M. zosteropis* (0.08 by 0.05); *M. taeniatum* (0.10); *M. lagodekhiense* Kuraschvili, 1955) (0.052); *M. gallinarum* (Bhalerao, 1937) Van Cleave, 1947) (0.064); *M. meiringi* (0.067); *M. wardi* (0.052) and mattei Marchand and Vassiliades, 1982 (0.065); *M. selengensis* (0.065-0.075); *M. giganteus* (0.066) and *M. tenius* (0.060).

These differences as well as a different host (*Milvus migrans migrans*) gives sufficient ground for considering *M. nickoli* a new species. The species is named in honour of Dr. Brent B. Nickol, University of Nebraska, Lincoln, USA.

REFERENCES

BAER, J.G., 1925. Un nouvel Acanthocephala d'oiseau *Heteroplus numidae* n.sp. *Rev. Swiss. Zool*., **31**: 539-553.

BHALERAO, G.D., 1937. On a remarkable acanthocephala from a fowl in India. *Proc. zool. Soc. London S.B.,* **107**: 199-203.

DE MARVEL, L., 1905. Monographie des Acanthocephalaes. d'orseaux. *Rev. Swisse Zool*., **13**: 195-387.

DIESING, K., 1851. *Systema helminthum*. Vindobonae 2. Bd.

DOLLFUS, R.P.H., 1936. Sur un acanthocephala du genera *Mediorhynchus*, H.J. Van Cleave dune on trade a huppenoioe, *Choritis arabs* (L.) du Sahel mauritanien. *Mem. Mus. R. Hist. Nat. Begques*, 421-443.

HARRIS, S.M.T., 1973. A new acanthocephala from an East African Galliform bird. *Bull. Br. Mus. (Nat. Hist.). Zool*., **24**: 455-460.

JOHNSTON, T.H. AND EDMONDS, S.J., 1951. Australian acanthocephala, No. 9. *Trans. R. Soc. S. Australia*, **75**: 16-21.

KHAN, A. AND BILQEES, F.M., 1998. On a new acanthocephalan parasite from common house crow in Sindh. *Pakistan J. Zool*., **30**: 35-37.

KHAN, A., BILQEES, F.M. AND GHAZI, R.R., 2001. Acanthocephalan parasite *Centronhynchus nickoli* n.sp., from Eurasian Ruller (*Coracias garrulous). Proc. Parasitol*., **32**: 33-39.

KHAN, A., GHAZI, R.R. AND BILQEES, F.M., 2002. Two new species of acanthocephalan parasites of house crow (*Corvus splendens* Vieillot). *Pakistan J. Zool*., **34**: 139-146.

KURASHIVILI, B.E., 1955. Acanthocepala of birds of Georgia (Russian text). *Soub. Akad. Nauk. Gruz. SSS*, **16**: 723-730.

LUNDSTROM, A., 1942. Die Acanthocephalan Schwedens. Mit Ausnahme des Fischacanthocephalan von Susswasserstandorten. *Monogr. Lund*, pp. 23.

MARCHAND, B. AND VASSILIADES, G., 1982. Acanthocephala, Giganthorhynchidae) from *Tokus erythrorhynchus* (Aves) the red-beaked hornbill, in West African (USA). *J. Parasit*., **68**: 1142-1145.

MEYER, A., 1931. Die Acanthocephalan der arkhischen Gebietes. *Fauna Arctica*, **6**: 9-20.

NICKOL, B., 1969. Acanthocephala of *Louisiana picidae* with description of a new species of *Mediorhynchus* in USA. *J. Parasi.*, **55**: 324-328.

PETROTSCHENKO, V.I., 1958. *Acanthocephala of domestic and wild animals*. Vol, 2, pp. 458.

PORTA, A., 1913. Acanthocephala della Nuova Caledonia e delle isole Loyalty F. Sarasin u. *J. Roux. Nouv Caled Zool*., **1**: 165-170.

SCHMIDT, G.D. AND CANARIS, A.G., 1967. Acanthocephala from Kenya with description of two new species. *J. Parasit*., **53**: 634-637.

SKRJABIN, I., 1913. Zur acanthocephalan fauna Russisch-Turkestans. Acanthocephalan der sumefund wasservogel. *Zool. J. Abt. Syst*., **35**: 403-414.

TUBANGUI, M.A., 1935. Additional notes on Philippine Acanthocephala. *Philipp. J. Sci*., **56**: 13-19.

TRAVASSOS, L., 1923. Acanthocephos dor animals domesticus. *Riv. Vet. Zootechn*., **10**: 3-23.

VAN CLEAVE, H.J., 1916. Seasonal distribution of some acanthocephalan from freshwater hosts. *J. Parasit*., **2**: 106-110.

VAN CLEAVE, H.J., 1916. Acanthocephala of the genera *Centrorhynchus* and *Mediorhynchus* (New genus) from North American birds. *Trans. Am. microsco. Soc*., **35**: 221-232.

VAN CLEAVE, H.J., 1947. The acanthocephalan genus *Mediorhynchus*, its history and a review of the species occurring in the United States. *J. Parasit*., **33**: 297-315.

WARD, J., 1960. Acanthocephala from Shoe bird of Egypt with the description of a new species of *Mediorhynchus. J. Parasit*., **46**: 611-614.

WEBSTER, J.D., 1948. A new acanthocephalan from the bob-white. *J. Parasit*., **34**: 84-86.

(Received 20 September 2003, revised 17 February 2004)