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TWO NEW AVIAN CESTODES OF THE GENUS *JONESIUS* YAMAGUTI, 1959 (CYCLOPHYLLIDEA: HYMENOLEPIDIDAE) IN KARACHI

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ABSTRACT

Two new species of the genus *Jonesius* Yamaguti, 1959 have been described from avian hosts in Karachi. *Jonesius calumbae* n.sp., from the pigeon *Columba livia* (Gmelen) is characterized by having elongated scolex with muscular rostellum provided with ten hooks, suckers rounded to oval, anteriorly armed with minute spines. Genital opening is unilateral, genital atrium sucker-like, inside the osmoregulatory canals, testes two, symmetrical, rounded to transversely elongate cirrus sac reaching slightly beyond the median field, internal seminal vesicle large, elongate, broad at the base, external seminal vesicle absent. Ovary relatively large, transversely elongate, submedian, more towards poral side, larger than testes, slightly bilobed in some proglotids, vitelline gland compact, small, dorsal to ovary, therefore hardly visible, seminal receptacle present, poterodorsal to ovary. Gravid segments were not present. Other new species *J. karachiensis* n.sp. from the duck *Tadorna tadorna* (Linn.) is characterized by having a flattened scolex and long rostellum with ten hooks. Suckers are large occupying the whole scolex region at the sides of the rostellum. Genital opening is unilateral, marginal, near the anterior border of proglottid, testes two, almost rounded, cirrus sac reaching the median field, internal seminal vesicle small, round, external seminal vesicle absent. Ovary is rounded to slightly irregular, relatively small, median to slightly submedian, vitelline gland compact very small, hardly visible, dorsal to ovary, seminal receptacle present but not prominent. Uterus is intervascular, transverse sac containing eggs. This is the first report of the genus *Jonesius* Yamaguti, 1959 from Pakistan.

Key words: Birds, intestine, cestodes, *Jonesius columbae* n.sp., *Jonesius karachiensis* n.sp., Karachi.

INTRODUCTION

Cestodes of birds described previously from Karachi and other parts of Pakistan are relatively few. Species of the genus *Raillietina* Fuhrmann, 1920 and *Cotugnia* Diamore, 1893 are the most common (Khan and Habibullah, 1967; Bilqees, 1985; Pal and Ahmed 1985). Other species reported belong to genera *Parecterotaenia* Fuhrmann, 1907, *Eugonodaeum* Beddard, 1913, *Choanotaenia* Railliet, 1896, *Neyraia* Joyex and David, 1934, *Skorikowia* Linstow, 1905, *Pulluterina* Smithers, 1954, (Khan and Habibullah, 1967), *Reticulatea* Khanum *et al.*, 1982, *Capsulana* Khanum *et al.*, 1982; *Hymenolepis* Weinland, 1858 (Khan *et al.*, 1983; Bilqees and Malik, 1974), *Neodiorchis* Bilqees and Fatima, 1982; *Oligorchis* Khan and Habibullah, 1971; *Echinocotyle* Blanchard, 1891 and *Diorchis* Clere, 1903 (Bilqees, 1985); *Tubanguilla* Bilqees and Jehan, 1977 and *Neoraillietina* Ghazi and Bilqees, 2002. But species of the genus *Jonesius* Yamaguti, 1959 has not been reported previously. The species originally described as *Diorchis ralli* Jones, 1944 from *Rallus elegans*, Virginia U.S.A. was shifted by Yamaguti (1959) in a new genus *Jonesius* and named as *J. ralli* Jones, 1944 on the basis of absence of external seminal vesicle (Schmidt, 1986). We have recovered two new cestodes of the genus *Jonesius* and described here. *Jonesius columbae* from the pigeon *Calumba livia* and *J. karachiensis* n.sp., from the duck *Tadorna tadorna.* The genus *Jonesius* Yamaguti, 1959 has not been described previously from Pakistan. Present is a new record referring to the host and the locality respectively.

MATERIALS AND METHODS

Two ducks *T. tadorna* and three pigeons *C. livia* were examined during a routine survey of avian parasites. Cestodes were found in the intestine of one duck and one pigeon. These were relaxed in warm water and fixed in AFA under slight pressure between two glass slides for 24 h, washed several times with 70% alcohol, stained with Mayer's carmalam, dehydrated in graded series of alcohols, cleared in clove oil and xylene and mounted permanently in Canada balsam. Diagrams are made with a camera lucida and measurements are given length by width in millimeters.

RESULTS

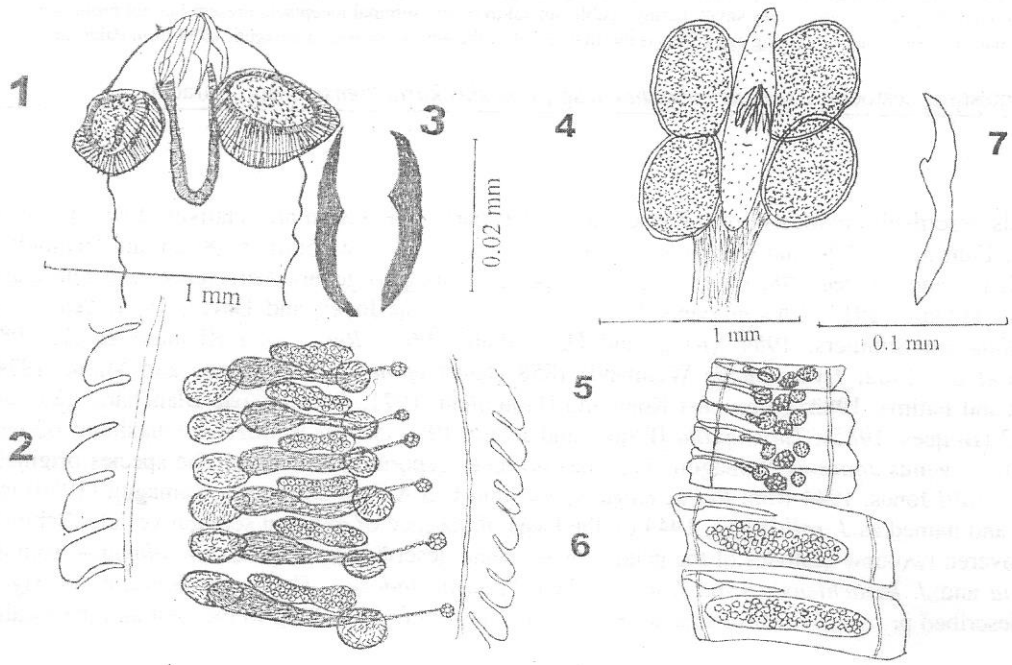
Jonesius columbae **(Figs. 1-3)**

Host: *Columba livia*
Location: Intestine

Locality: Karachi, Pakistan
No. of specimens: One from a single host, three hosts examined
Cat. No.: BM Coll. C 51

Very long delicate worms with a prominent scolex which is strongly developed, measuring 0.97 in length and 0.89 in width. Rostellum is also strongly developed, muscular elongate structure, protrusible and extends beyond the posterior margins of suckers, measuring 0.69 in length and 0.29 in width. There are ten prominent rostellar hooks in a single row, measuring approximately 0.021 in length, blades of hooks are short, handle long with a slightly projecting guard, handles almost 0.017 in length, blades 0.0031 in length. Suckers are four, strongly muscular armed with rows of minute spines.

Neck 0.3 in length. There are 100 to 150 immature segments and 150 to 200 partly and fully mature segments. All segments much wider than long. Immature segments 0.018 to 0.039 in length and 0.19 – 0.21 in width. Mature segments 0.25 – 0.39 in length and 1.71 – 1.92 in width. The testes are two, rounded to oval in shape, situated near the posterior wall of the segments, ventral in position, slightly parallel in position measuring 0.11 – 0.21 by 0.29 – 0.31. Genital openings inside vascular canals, unilateral, genital atrium sucker-like, cirrus pouch is long cylindrical containing large internal seminal vesicle and cirrus. Cirrus pouch 0.81 – 0.91 in length, 0.019 – 0.020 in width. Internal seminal vesicle broad at the base and narrow anteriorly measuring 0.12 – 0.21 in length. Greatest width 0.030 – 0.031. External seminal vesicle is absent. Ovary transversely elongate, slightly bilobed in some segments, submedian, more towards the poral side measuring 0.31 – 0.34 by 0.11 – 0.12 in size, seminal receptacle present. Vitellaria compact, hardly visible as it is situated at the back of ovary, dorsal to it.



Figs. 1-3. *Jonesius columbae* n.sp., 1. Scolex, 2. Rosteller hooks enlarged, 3. Mature segments.
Fig. 4-7. *Jonesius karachiensis* n.sp., 4. Scolex, 5. Rosteller hooks, 6. Mature segments, 7. Gravid segments.

***Jonesius karachiensis* (Figs. 4-7)**

Host: *Tadorna tadorna*
Location: Intestine
Locality: Karachi, Pakistan
No. of specimens: One from a single host, three hosts examined
Cat. No.: BM Coll. C 52

Long worms with a flattened almost square scolex measuring 0.99 in length and 0.89 in width. Rostellum is provided with a single row of ten hooks which have a long blade, short handle and a prominence of guard. Each of the hooks measure 0.011 – 0.013. Rostellum or the infundibulum is relatively very long extending to the posterior

boarder of the suckers. Suckers are flattened provided with numerous minute spines and measure 0.39 – 0.46 by 0.38 – 0.48 in size. There is a narrow neck 0.46 in length and 0.32 in width. All the segments are much broader than long. There are 23 immature segments in which external segmentation is indistinct each measuring 0.12 – 0.15 by 0.74 – 0.76. Mature segments measure 0.31 – 0.31 by 1.2 – 1.5. Total number of mature segments 127, gravid segments 60. Gravid segments measure 0.49 – 0.58 by 1.8 – 1.9.

Testes two, small, rounded, slightly submedian towards aporal sides 0.19 – to 0.22 in diameter. Cirrus pouch elongate measuring 0.60 – 0.61 in length containing a small elongate seminal vesicle. External seminal vesicle absent. Genital pore marginal, unilateral, near the anterior margins of the segments. Ovary rounded to slightly irregular, equal or slightly smaller than testes, 0.18 – 0.20 in diameter. Vitellaria compact, behind the ovary, not prominent, a minute seminal receptacle is present dorsal to ovary. Gravid segments contain a sac-like, transverse uterus with numerous eggs. Uterus is intervascular in position.

DISCUSSION

Present communication reports two species of the genus *Jonesius* Yamaguti, 1959, which is similar to the genus *Dorchis* Clerc, 1903 in all essential features. But Yamaguti, 1959 separated the species *Diorchis ralli* Jones, 1944 from other species due to absence of external seminal vesicle and erected a new genus *Jonesius* to accommodate this species. The only main difference is that external-seminal vesicle is present in *Diorchis* and it is absent in *Jonesius*. The present two species are therefore, included in the genus *Jonesius* because external seminal vesicle is absent, although in other characteristics these are similar to *Diorchis*. The present specimens are regarded new species including *J. karachiensis* from the duck *T. tadorna* and *J. columbae* from the pigeon *C. livia*, in which external seminal vesicle is absent. The present species are different from each other in the morphology of scolex, sizes of immature, mature and gravid segment. The segments in *J. karachiensis* are distinctly craspedote while in *J. columbae* these are not like this. The testes and ovaries in *J. columbae* are transversely elongate while these are rounded in *J. karachiensis*. The genital opening in *J. columbae* is submarginal situated behind the vascular canal while it is marginal out side the vascular canals in *J karachiensis*. These characters also separate the new species from the only species of the genus *J. ralli* Jones, 1944. The species name *J. karachiensis* from *T. tadorna* refers the locality of the host while *J. columbae* from *Columba livia* refers to the host.

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