



E-ISSN: 2320-7078
P-ISSN: 2349-6800
JEZS 2016; 4(5): 113-115
© 2016 JEZS
Received: 17-07-2016
Accepted: 18-08-2016

Suleman
Department of Zoology, Hazara
University, Mansehra, Pakistan.

Mian Sayed Khan
Department of Zoology,
University of Swabi, Khyber
Pakhtunkhwa, Pakistan

First record of *Lyperosomum longicauda* Rudolphi, 1809 (Trematoda: Dicrocoeliidae) in house crow (*Corvus splendens*) of district Swabi, Khyber Pakhtunkhwa, Pakistan

Suleman and Mian Sayed Khan

Abstract

During the investigation of trematodes of house crow in district Swabi, Khyber Pakhtunkhwa, Pakistan; three specimens of *Lyperosomum longicauda* (Rudolphi, 1809) Looss, 1899 were recovered from the bile ducts of the host. This is the first report of *L. longicauda* in Pakistan and *Corvus splendens* is the new host record for this trematode.

Keywords: *Lyperosomum longicauda*, bile ducts, house crow, Swabi, Khyber Pakhtunkhwa

Introduction

The family Corvidae is a complex family of passerine birds; comprises 100 to 113 species including crows, rooks, jays, magpies, ravens, chough, jackdaws and nutcrackers; assembled in 25 genera [7, 10, 12]. Among these the genus *Corvus* are species richest, makes up a third of the species in the family Corvidae, consist of true crows and is distributed throughout the world except Antarctica and South America [6, 9]. They are large passerine birds characterized by either all over black color or black with grey or white patches [9]. The house crows (*Corvus splendens* Vieillot, 1817) is indigenous to Asia but have colonized many other parts of the world including Malaysia to South Africa, while predominantly founded in Australasian region [11, 20]. They also occupy a wide range of habitats all over Pakistan [1, 18]. They are the most intelligent birds and appear in close association with humans, thus play role in spreading of many micro and macro pathogens to human as well as to indigenous avifauna and livestock [17]. It is omnivorous in nature; feeds on both plants and animals like seeds, fruits, grains, nectars, amphibians, fishes, insects, carriions and some invertebrates, which are the intermediate hosts of trematodes [3, 9, 11]. Due to this omnivorous nature the house crow is exposed to helminthic infection, however the helminths infestation depends on the type of food available, on which they feeds [13]. In the present study the mentioned birds was therefore investigated for the presence of trematode parasites.

Materials and Methods

From July 2012-March 2014, a total of 48 house crows were collected from different tehsils of district Swabi, Khyber Pakhtunkhwa and brought to the parasitology laboratory of Hazara University, Mansehra, Pakistan. The anesthetized or air gun shoot dead crows were dissected and the whole elementary canal including liver, gallbladder, bile ducts and kidney were examined for the presence of trematodes. Three specimens of trematode were recovered from the gall bladder of the two birds. The trematodes were placed in between two clean slides, pressed at tolerable pressure and tied with cotton thread.

The slides were fixed in AFA (Alcohol; Formaldehyde; Acetic acid) solution overnight and the pressed specimens were then dehydrated in 30%, 50% and 70% alcohol. Dehydrated trematodes were stained in Borax Carmine, again dehydrated with 70%, 80%, 90% and 100% ethanol, cleared in clove oil for 15-20 minutes, rinsed in xylene and finally mounted in Canada balsam.

The microphotographs were taken with the help of digital camera and diagrams were made with the aid of camera Lucida. By using trematodes identification keys [2, 21] and literature [8, 15], the specimens were identified as *Lyperosomum longicauda* (Rudolphi, 1809) Looss, 1899.

Correspondence
Suleman
Department of Zoology, Hazara
University, Mansehra, Pakistan.

All measurements are given in millimeter. Holotype is deposited in Department of Zoology, Hazara University, Mansehra, Pakistan.

Lyperosomum longicauda (Rudolphi, 1809) Looss, 1899

(Fig. 1 and 2)

| | |
|--------------------------|--------------------------------------|
| Host : | Common crow, <i>Corvus splendens</i> |
| Location: | Bile ducts (liver) |
| Locality : | Pabaini, Swabi |
| Number of specimen: | Three from two hosts |
| Frequency of appearance: | 6.25% |
| Accession number: | HUPL-1 |

Description

Body is fusiform, elongate, dorsoventrally flattened; somewhat lanceolate and $7.66-11.14 \times 0.35-1.62$ mm in size. Maximum width is at acetabulum region. Fore body, hind body ratio is 2.6:8.5. Oral sucker is terminal and smaller than acetabulum, $0.25-0.36 \times 0.35-0.52$ mm in measurement. Pre-pharynx is absent. Pharynx is partially dorsal to oral sucker and $0.17-0.19 \times 0.21-0.24$ mm in size. Esophagus is short, 0.05-0.11 mm long, branching into two caeca which are not reaching to the posterior extremities and ending 1.95 mm away from posterior end. Ventral sucker is sub-median, larger than oral sucker, $0.71-0.75 \times 0.84-0.91$ mm in size and is situated 0.57 mm apart from cecal bifurcation. Testes are separated from ventral sucker and from each other by uterine coils, located in oblique position and round to oval in shape. Anterior testis is $0.29-0.30 \times 0.37-1.14$ mm in size and posterior testis is $0.29-0.41 \times 0.39-0.51$ mm. Cirrus sac is elongated flask-shaped or bottle-shaped and $0.47-0.76 \times 0.24-0.26$ mm in size. The genital pore is pre-bifurcation, sub-median in positions and located slightly below to the pharynx.

Ovary is $0.25-0.48 \times 0.30-0.45$ mm in size, somewhat round, sub-median to median in position and is separate from posterior testis by uterine coil. Seminal receptacle is small, $0.16-0.31 \times 0.15-0.25$ mm, elongated oval in shape and is situated just behind ovary.

Vitellaria commencing at the middle level of posterior testis and extending laterally up to 4th quarter of the body. Mehlis gland is covered by dense uterine coils. Uterus consists of ascending and descending coils with large, dark brown eggs which are $0.033-0.040 \times 0.022-0.026$ mm in size.

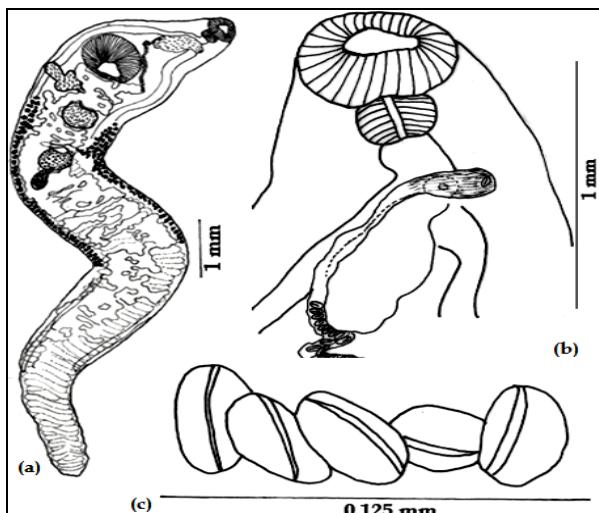


Fig 1: Diagrams of *L. longicauda* Rudolphi, 1809

- a. Entire specimen holotype b. Oral sucker with intestinal bifurcation and cirrus pouch c. Eggs

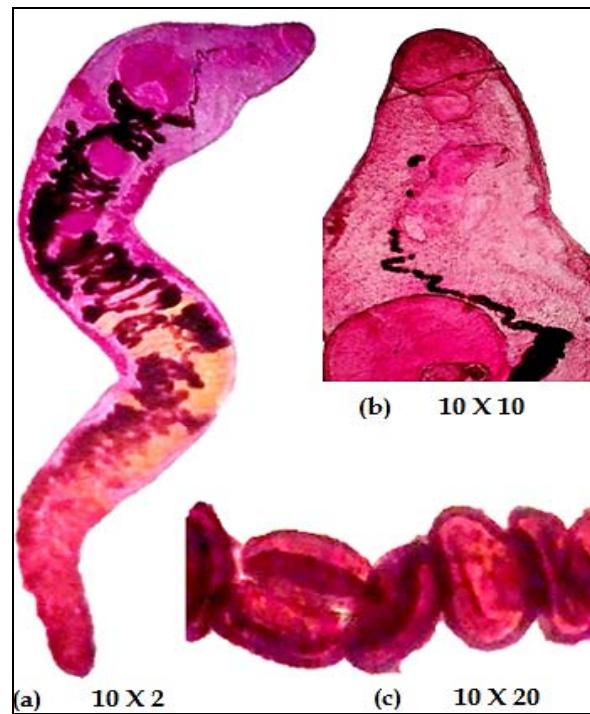


Fig 2: Photomicrographs of *L. longicauda* Rudolphi, 1899
a. Entire specimen holotype b. Oral sucker with intestinal bifurcation and cirrus pouch c. Eggs

Discussion

The present paper deals with description of a known species *L. longicauda*. Genus *Lyperosomum* Looss, 1899 syn. of *Oswaldoia* Travassos, 1920 and *Paralutztrema* Faust, 1967 was established by Looss, 1899, containing the species of trematodes characterized by narrow, long fusiform and cylindrical body; acetabulum larger than oral sucker; testes oblique and close to acetabulum; vitelline bands commencing at testicular zones on either side of body; ovary separated from posterior testis by uterine coils; genital pore posterior to pharynx and anterior to intestinal bifurcation.

The genus *Lyperosomum* Looss, 1899 was divided two subgenera [21], *Lyperosomum* Looss, 1899 and *Lyperosomoides* Yamaguti, 1971. *L. longicauda* (Rud., 1809) Looss, 1899 was suggested as type species of the subgenus *Lyperosomum* Looss, 1899 and other documented species are *L. clathratum* (Deslongchamps, 1824) Skrjabin et Uditsev, 1930; *L. squamatum* v. Linstow, 1906; *L. skrjabini* (Solov'ev, 1911) Shtrom, 1940; *L. scitulum* Nicoll, 1914; *L. direptum* Nicoll, 1914; *L. sinuosum* Travassos, 1917; *L. oswaldoi* (Travassos, 1920) Travassos, 194; *L. rossicum* (Skrjabin et Isaichikov, 1927) Shtrom, 1940; *L. collurionis* (Skrjabin et Isaichikov, 1927) Shtrom, 1940; *L. pawlowskii* (Shtrom, 1928) Travassos, 1940; *L. alagesi* (Skrjabin et Uditsev, 1930) Shtrom, 1940; *L. alaudae* (Shtrom et Sondak, 1935) Shtrom, 1940; *L. urocissae* Yamaguti, 1939; *L. schikhobalovi* Kasimov in Skrjabin and Evranova, 1953; *L. sarothrurae* Baer, 1959; *L. coracii* Sultanov, 1962; *L. charadrii* Belopol'skaia, 1963; *L. anatis* Belogurov et Leonov 1963; *L. indosinense* (Odining, 1964); *L. stunkardi* Agrawal, 1964; *L. kavini* Fotedar et Raina, 1965; *L. metatestis* Belogurov et Tseva, 1967; *L. hylacichiae* (Faust, 1967) and *L. formosaense* Yamaguti, 1971.

The type species of the subgenus *Lyperosomoides* is *L. corvi* Yamaguti, 1939 while other species are *L. dujardini* (Shtrom et Sondak, 1935) Shtrom, 1940 and *L. turdia* (Ku, 1938) Travassos, 1944.

Recently, authors documented that the genus *Lyperosomum* Looss, 1899 is composed of 41 species [14]. They also included *L. petiolatum* (Railliet, 1900) and *L. lari* Travassos, 1917 in the genus *Lyperosomum* Looss, 1899; which was excluded by Yamaguti, 1971 while *L. squamatum* v. Linstow, 1906 was omitted from this genus. A new subgenus *Sinuosoides* Denton and Krissinger, 1975 was proposed, typified by *Lyperosomum (Sinuosoides) sinuosum* Travassos, 1917 and characterized by long, narrow body, with nearly parallel sides, gonads nearly in the same longitudinal axis and parasitic in the pancreas, bile ducts or intestine of birds. Other species of this genus were discovered in different avian host from different parts of the world including *L. intermedium* Denton and Kinsella, 1972; *L. duculae* Fischthal and Kuntz, 1973; *L. vitellorum* (Fischthal and Kuntz, 1974); *L. megacytolum* Andrews, 1977; *L. reangensis* Soota and Ghosh, 1977; *Lyperosomum pomatorhinum* Li Minmin, 1981; *L. mindorense* Eduardo and Gaddi, 2003 and *L. velasquezae* Eduardo and Gaddi, 2003.

L. longicauda (Rud., 1809) Looss, 1899 parasitized the bile ducts and gall-bladder of different avian hosts and occasionally of mammals [8, 21]. Different authors recovered this species from different avian host [4, 8, 15, 16, 19].

The present species is similar to literature [8, 15] in all essential features. Detail description, morphological structure with the help of photomicrographs and diagrams of *L. longicauda* (Rud., 1809) Looss, 1899 are given in this report.

References

1. Akram N, Khan HA, Javed M. Inhibiting the house crow (*Corvus splendens*) damage on maize growth stages with reflecting ribbons in a farmland. Journal of Animal and Plant Sciences. 2013; 23(1):182-189.
2. Bray RA, Gibson DI, Jones A. Keys to the Trematoda, CABI. 2008; 3:233-260.
3. Dar JA, Tanveer S, Kuchai JA, Dar SA. A study on Cestode Parasites of *Corvus* Species of Kashmir, India. The Journal of World's Poultry Research. 2013; 3(1):28-34.
4. Davies JB. On Some Trematode Parasites from the Jackdaw, *Corvus monedula* in Britain. Journal of Helminthology 1958; 32:33-44.
5. Díaz V, Lozano J, Mañas I, Campos M, González J. First record in Spain of *Lyperosomum longicauda* (rud. 1809) Looss 1899, a digenetic trematode of the intestine of *Turdus philomelos*. Ars pharmaceutica 1996; 37(2):305-307.
6. dos Anjos L, Debus SJS, Madge SC, Marzluff JM. Family Corvidae (crows). In: del Hoyo J, Brugarolus RM, Pascual C, Ruiz-Olalla P, Sargatal J (eds), Handbook Birds of the World, Lynx Edicions, Barcelona 2009; 14:494-640.
7. Ericson PGP, Jansen AL, Johansson US, Ekman J. Inter-generic relationships of crows, jays, magpies and allied groups (Aves: Corvidae) based on nucleotide sequence data. Journal of Avian Biology 2005; 36:222-234.
8. Gonenc B, Oge H, Oge S, Emir H, Ozbakis G, Asti C. First record of *Lyperosomum longicauda* Rudolphi, 1809 (Trematoda: Dicrocoeliidae) in Northern Bald Ibis (*Geronticus eremita*) in Turkey. Ankara Universitesi Veteriner Fakultesi Dergisi 2012; 59:227-230.
9. Haring E, Daubl B, Pinsker W, Kryukov A, Gamauf A. Genetic divergences and intraspecific variation in corvids of the genus *Corvus* (Aves: Passeriformes: Corvidae) – a first survey based on museum specimens. Journal of Zoological Systematics and Evolutionary Research 2012; 50(3):230-246.
10. Haring E, Gamauf A, Kryukov A. Phylogeographic patterns in widespread corvid birds. Molecular Phylogenetics and Evolutions 2007; 45(3):840-862.
11. Khan HA, Jabeen G, Anwar N. Foraging rhythms of house crow (*Corvus splendens*) for 30 and 60-minute durations on some crops in an agro-ecosystem in Faisalabad. Pakistan Journal of Agricultural Sciences 2007; 44(2):283-288.
12. Khan S, Ahmad H, Perveen F, Mehmood A, Dilber H, Syed HH. Genetic diversity and phylogenetic analysis of crow species of district Mansehra, Pakistan. Pakhtunkhwa Journal of Life Sciences 2013; 1(2):60-69.
13. Kyi KK, Poon SK. Prevalence of Helminth parasites of house crow (*Corvus splendens Vieillot*) from the Kelang District of peninsular Malaysia. Folia Parasitologica 1987; 34:347-355.
14. Merritt SV, Pratt I, Muzzall PM, Rabalais FC, Nickol BB, Rohlf FJ. *Lyperosomum byrdi* sp. n. (Digenea: Dicrocoeliidae) from the Rufous-sided Towhee, *Pipilo erythrrophthalmus* (L.), with a Revised Synopsis of the Genus. In: Proceeding of the Helminthological Society of Washington 2011; 42:31-34.
15. Mettrick DF. Helminth Parasites of Hertfordshire Birds 1-Trematoda. Journal of Helminthology. 1958; 32(1-2):49-64.
16. Nicoll W. A reference list of the trematode parasites of British birds. Parasitology 1923; 15:151-202.
17. Nyari A, Ryall C, Peterson A. Global invasive potential of the house crow *Corvus splendens* based on ecological niche modeling. Journal of Avian Biology 2006; 37(4):306-311.
18. Qureshi S, Kazmi SJH, Breuste JH. Ecological disturbances due to high cutback in the green infrastructure of Karachi: Analyses of public perception about associated health problems. Urban Forestry and Urban Greening 2010; 9(3):187-198.
19. Rudolphi KA. Entozoorum, sive, Vermium intestinalium: historia naturalis (in Latin). 1908; 2:457.
20. Ryall C. Further records of range extension in the House Crow *Corvus splendens*. Bulletin of the British Ornithologists' Club 2002; 122(3):231-240.
21. Yamaguti S. Synopsis of digenetic trematodes of vertebrates: Keigaku Publishing Co. Tokyo, Japan. 1971; 1:581-582.