

# Systematic observation of the genus *Stilesia* railliet, 1893 from *Ovis Bharal* with description of a new species

SUNITA MADHUKARRAO SHINDE<sup>1</sup>, SANJAY SHAMRAO NANWARE<sup>2</sup> AND DHANRAJ BALBHIM BHURE<sup>2</sup>

<sup>1</sup>Department of Zoology, Mahatma Phule Jr. College, Ahmedpur, LATUR (M.S.) INDIA

<sup>2</sup>Department of Zoology, Yeshwant Mahavidyalaya, NANDED (M.S.) INDIA

Email : snanware@rediffmail.com

The present communication deals with new species of the genus *Stilesia* Railliet in 1893 i.e. *Stilesia intestinalis* sp. Nov. collected from *Capra hircus* (L.) from Shirur Anantpal Dist. Latur (M.S.) India. The present form comes closer to all the known valid species of this genus in general topography of organs but differs due to some characters i.e. Scolex rectangular, suckers four, large, muscular, arranged in two groups, neck long, mature proglottids 8 times broader than long, testes small, arranged in two groups, 4 in each groups, genital pore marginal, regularly alternate, vagina anterior to cirrus pouch, ovary compact and cylindrical.

**Key words :** *Capra hircus*, *Stilesia*, Systematic observation

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## INTRODUCTION

The genus *Stilesia* was erected by Railliet in 1893 from *Ovis aries* in Europe, Asia and Africa as *Stilesia globipunctata*, later on in 1896 Railliet described *Stilesia vittata* from *Camelus bacterium's* from East Africa later on Wolffhugel in 1903 added *Stilesia hepatica* from sheep and goat from East Africa. In India *Stilesia okapi* was described by Leiper in 1936 from *Okapi* in Africa, is regarded by Baer, 1950 as a variety of *Stilesia globipunctata*. Kadam *et al.*, 1980 added *Stilesia leiperi* from *Ovis bharal* later on *Stilesia caballeroi* was erected by Kalyankar (1981) from *Capra hircus*. Shinde, 1982 described *Stilesia southwelli*, Later on Jadhav *et al.*, 1982 described *Stilesia aurangabadensis* from *Ovis bharal*. Malhotra and Capoor, 1983 added two new species i.e. *Stilesia gharwalensis* and *Stilesia Kothwarensis* from *Capra hircus*, *Ovis bharal*, respectively. Shinde *et al.* (1985) added *Stilesia marathwadensis* from *Capra hircus* later on Jadhav (1999) described *Stilesia jadhavae* from *Ovis, bharal, Stilesia yawalensis*, was added by Kalse *et al.* (1999) from *Capra hircus*. Deshmukh and Shinde (2001) added *Stilesia dhondage* from *Capra hircus* Patil *et al.*, 2002 added *Stilesia capari* from *Capra hircus*, later on Pawar *et al.*, 2004 added *Stilesia ambajogaensis* from *Bos indicus*. Later on *Stilesia pandeyi* was described by Nanware and Jadhav, 2004 from *Capra hircus*. Khadap (2004) reported

*Stilesia indapurensis* from *Capra hircus*, in 2004 Shelke and Shinde (2004) described *Stilesia daulatabadensis* from *Capra hircus* later on Nanware and Jadhav, 2005 described *Stilesia jadhavae* from *Capra hircus* and Padwal and Jadhav in 2006 added *Stilesia govindae* from *Ovis bharal*.

## RESEARCH METHODOLOGY

Thirty one cestode parasites were recovered from the intestine of *Capra hircus* (L.) from Shirur Anantpal Dist. Latur M.S. India during the period of July, 2007 to June, 2010. Out of these cestodes Seven cestodes were fixed in 4 per cent formalin for taxonomical aspect and stained with Harris alum haematoxylin as well as Borax carmine. The drawings are drawn to scale with the aid of camera lucida and all the measurements are calculated in millimeter.

## RESEARCH FINDINGS AND ANALYSIS

The findings of the study have been discussed in detail as under:

### Description based on five specimen (Fig. 1 and 2) :

The worms were considering long with numerous proglottids. The strobila is divided into many immature and

mature proglottids. Scolex, which is large well developed, rectangular and measuring 1.43 (1.325-1.961) in length and 1.691(1.537-1.855) in width. The suckers which are four in number, rounded, arranged in two groups, muscular and measures 0.556 (0.477-0.636) in length and 0.53 (0.43-0.63) in width. Scolex is followed by a long and measures 1.11(1.06-1.17) in length and 1.033 (1.007-1.06) in width.

Mature proglottids are eight times broader than long and measures 0.249 (0.233-0.265) in length and 2.570 (2.544-2.597) in width. Testes are very small, oval to rounded, arranged in two groups, 4 in number on each side and measures 0.053 (0.042-0.063) in length and 0.047(0.031-0.063) in width. Cirrus pouch is medium, cylindrical, lies at posterior side of the segment and measures 0.116 (0.106-0.127) in length and 0.042 (0.031-0.053) in width. Cirrus is thin, slightly curved, within the cirrus pouch and measures 0.095 (0.084-0.106) in length and 0.021 (0.010-0.031) in width. The vas deferens is long, straight tube and measures 0.143 (0.127-0.159) in length and 0.026 (0.021-0.031) in width.

Vagina and cirrus pouch open into a common pore known as genital pore, which is small in size, oval in shape, regularly alternate, marginal and measures 0.026 (0.021-0.031) in length and 0.021 (0.010-0.031) in width. The vagina is thin tube, slightly curved, arised from anterior to cirrus pouch, forms receptaculum seminis and measures 0.450 (0.424-0.477) in length and 0.021 (0.010-0.031) in width. Receptaculum seminis is straight tube, open into ootype and measures 0.095 (0.084-0.106) in length and 0.026 (0.021-0.031) in width. Ootype is oval, small in size, compact and measures 0.042 in diameter. From the ootype, ovarian lobe are started, ovary is compact, cylindrical, oval and measures 0.143 (0.127-0.159) in length and 0.047(0.031-0.063) in width. The excretory canals are situated on either side of the proglottid and measures 0.249 (0.233-0.265) in length and 0.026 (0.021-0.031) in width.

The genus *Stilesia* was erected by Railliet, 1893 for *Stilesia globipunctata*, Rivolta, 1874. The present worm comes closer to all the known species of the genus *Stilesia* Railliet, 1893 in general topography of organs. But differs due to some characters from following species.

- The present parasite differs form *S. globipunctata* (Rivolta, 1874) Railliet, 1893 in having scolex small in size, rounded, testes 4-7, cirrus pouch small, pyriform, ventral to vagina, ovary spherical, vagina dorsal to cirrus pouch and reported from *Ovis aries* in Europe.
- The worm under discussion differs from *Stilesia vittata* Railliet, 1896, in having testes 5-9 each in two lateral groups, vas deferens closely coiled, cirrus pouch elongated, cylindrical, ovary rounded compact, genital pore in anterior half of the segment and reported from *Camelus bactranus* in Africa.
- The present tapeworm differs from *Stilesia hepatica* Wolffhugel, 1903, in having testes 6-7, in each side, pre

ovarian, vas deferens not closely coiled, but extending up to excretory canal, ovary small, compact, oval, vagina anterior to cirrus pouch, genital pore in the middle of the segment and reported from the liver of *Ovis aries*.

- The worm under discussion differs from *Stilesia okapi* Leiper, 1936 in having testes 2-3 testes in each lateral side and from *Okapi* in Africa.
- The present parasite differs from *Stilesia leiperi*, Kadam *et al.*, 1980, which is having testes 5-6, on each side, cirrus pouch cylindrical, vas deferens not closely coiled but extend beyond long excretory canals, ovary medium, almost circular, compact with small acini and genital pore in anterior half of the segment and reported from *Ovis bharal*.
- The present worm differs from *Stilesia caballeri*, Kalyankar, 1981 in having the scolex very small, testes 1 to 11 in number testes on each side, disposed in 2 to 3 rows.
- The present form differs from *Stilesia southwelli* Shinde, *et al.*, 1982, which is having quadrangular scolex, mature proglottids 5 times broader than long, testes 4 in each two lateral groups, vas deferens very much coiled, reaching upto ovary, ovary small, round without acini, genital pore at 1/3<sup>rd</sup> from anterior margin of the proglottid, par uterine organs two in each proglottid, transversely elongated, containing (10-15) group of eggs.
- The present worm differs from *Stilesia aurangabadensis*, Jadhav (1982) in having the scolex spherical, testes rounded, in two lateral groups, 5 on each lateral side of the proglottid and lateral to ovary, vas deferens not coiled, reaches up to longitudinal excretory canal, cirrus pouch cylindrical, ovary medium in size, compact, circular in poral half and reported from *Ovis bharal* in India.
- The present tapeworm differs from *Stilesia garhwalensis* Malhotra and Capoor (1983) in having the size of scolex 0.510-0.840 in diameter, testes 0-9 in numbers, size of cirrus pouch 0.011-0.101 in diameter, size of ovary 0.009-0.097 in diameter, genital pore situated at anterior 1/3<sup>rd</sup> level of lateral margin of proglottid.
- The present cestode differs from *Stilesia kotwarensis*, Malhotra and Capoor (1983) in having testes 1 to 12 in numbers, ovary small, spherical, situated inner to the longitudinal excretory canal on poral side, genital pore at anterior 1/3<sup>rd</sup> level of lateral margin of proglottid and reported from *Ovis bharal* in India.
- The present form differs from *Stilesia marathwadensis* Shinde *et al.* (1985) is having proglottids broader than long, testes 5-7 in number, rounded, in two groups and cirrus pouch cylindrical.
- The present worm differs from *Stilesia jadhavae* Jadhav (1999) in having the mature proglottids 8 times broader

than long, testes 5-7 in numbers, ootype 0.045 in diameter, ovary 0.197 in diameter, vagina anterior to cirrus pouch and reported from *Ovis bharal* in India.

- The present cestode differs from *Stilesia yawalensis* Kalse *et al.*, 1999, in having scolex quadrangular, mature proglottids broader than long, testes rounded, in 2 groups (5-6 in number), vas-deference thin, curved, cirrus pouch oval, ovary medium, globular, a single mass, vagina thin and genital pore marginal.
- The present parasite differs from *Stilesia dhondgae*, Deshmukh *et al.* (2001) in having scolex quadrangular, broad anteriorly, testes oval, 8-10 in numbers, arranged in 2 rows, vas deferens short, cirrus pouch small, oval, situated middle to posterior side, ovary bilobed and par uterine organ simple.
- The present worm differs from *S. capari* Patil *et al.*, 2002 in having scolex globular, testes 8-9 in numbers, vas deferens short, cirrus pouch small, ovary sac like and vagina anterior to cirrus pouch.
- The present cestode differs from *S. ambajogaensis* Pawar *et al.*, 2004 in having scolex quadrangular, testes 25-30 in numbers, cirrus pouch cylindrical, elongated,

ovary small, oval, vagina anterior to cirrus pouch and reported from *Bos indicus*, in India.

- The present tapeworm differs from *Stilesia pandeyi*, Nanaware *et al.* (2004) in having scolex large, with four suckers, neck short and wide almost four times broader than long, mature proglottids almost 17 times broader than long, with convex lateral margins and slight projections at posterior corners of proglottid, testes are on two lateral fields, 20 in number, cirrus pouch small, elongated, at one third of anterior margins of proglottid, obliquely placed, cirrus thin, slightly curved, vas deferens short, medium, obliquely placed, ovary small, oval, with 3-4 short, blunt acini, vagina thin tube, runs obliquely, ootype small and rounded, genital pores medium, oval.
- The present cestode differs from *Stilesia indapurensis*, Khadap and Jadhav, 2004 in having scolex medium, quadrangular, broad anteriorly, mature proglottids squarish, testes oval, 8 to 9 in numbers, vas deferens curved, cirrus pouch large elongated, vagina thin, par uterine organs two in each mature segment.
- The present parasite differs from *Stilesia daulatabadensis*, Shelke and Shinde (2004) in having scolex globular, medium, squarish, testes acraspedate, eleven in number, 7 on poral and 4 on aporal side, vas deferens medium, slightly curved, cirrus pouch medium, oval, ovary medium, oval, single mass, vagina thin, long, anterior to cirrus pouch, slightly curved and par uterine organ 2 in number.
- The present worm differs from *S. jadhavi* Nanaware and Jadhav (2005) in having scolex globular, testes 14 in numbers, ovary lobulated and vagina anterior to cirrus pouch.
- The present cestode differs from *S. govindae* Padwal and Jadhav (2006) in having scolex medium, elongated, mature proglottids 15 times broader than long, testes 12-14 in numbers, cirrus pouch cylindrical, sac like, vas deferens long, ovary lobulated and vagina postero-ventral to cirrus pouch.

The above noted characters are valid enough to erect a new species. Hence the species is named as *S. intestinalis* sp. Nov. after the habit and habitat of parasite.

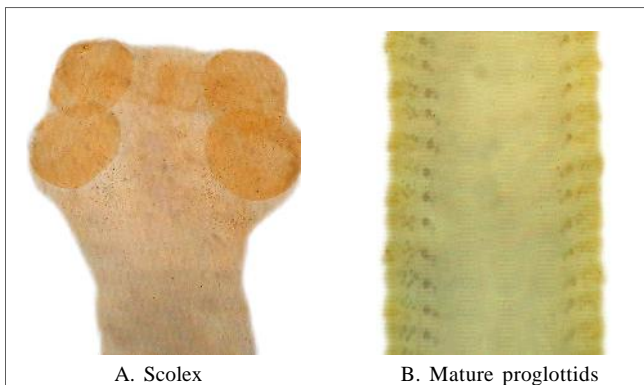


Fig. 1 : Microphotoplate of *Stilesia intestinalis* sp. Nov.

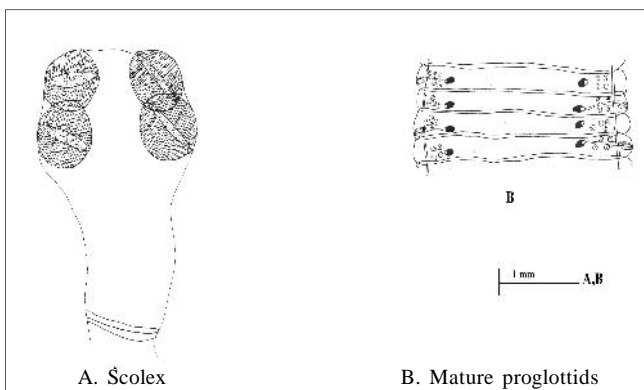


Fig. 2 : Camera Lucida Diagram of *Stilesia intestinalis* sp. Nov.

**Taxonomic summary:**

- Genus : *Stilesia* Railliet, 1893
- Species : *Stilesia intestinalis* sp. Nov.
- Type host : *Ovis bharal*
- Habitat (Site) : Intestine
- Type locality : India, Maharashtra Latur (Shirur Anatpal)
- Prevalence : 31 specimens are collected from 19 host out of 25 examined.

- Period of collection : July, 2007 to June, 2010. Testes 8-10 in number - *S.dhondagae*  
 Number of specimen : 31 Deshmukh and Shinde, 2001  
 Accession number : PGDZ/YMN/1-5/July, 2007 June, 2010. Testes 25-30 in number - *S. ambajogaensis*  
 Deposition : P.G. Department of Zoology, Pawar *et al.*, 2005  
 Yeshwant Mahavidyalaya, - Cirrus pouch elongated - *S. okapi* Leiper, 1936  
 Nanded (M.S.) India - Cirrus pouch cylindrical - *S. lepri* Kadam *et al.*, 1950  
 Etymology : Named after the habit and habitat of parasite. Cirrus pouch oval in Shape - *S.caballeroi*  
 Kalyankar *et al.*, 1981  
 A key to the species of the genus *Stilesia* Railliet, 1893. - Scolex quadrangular - *S. southwelli*  
 Shinde *et al.*, 1982  
 Vagina anterior to cirrus pouch - 1 Scolex spherical in shape - *S. aurangabadensis*  
 Vagina posterior to cirrus pouch - 2 Jadhav *et al.*, 1902  
 Vagina postero-ventral to cirrus - *S. govindae* pouch Scolex globular - 9  
 Padwal and Jadhav (2006) Scolex circular - 10  
 - Scolex rounded - *S. vittata* Railliet, 1986  
 Scolex globular - 4 - Scolex rectangular - *S. intestinalis* sp.Nov.  
 Scolex quadrangular - 5 - Cirrus pouch oval in shape - *S. daulatabadensis*  
 Shelke and Shindey, 2004  
 - Mature proglottids longer than broad - 6 Cirrus pouch elongated - *S. indapurensis*  
 Khadap, 2004  
 Mature proglottids broader than long - 7 - Ovary spherical - *S. garhwalensis*  
 Malhotra and Capoor, 1983  
 Mature proglottids squarish in shape - 8 Ovary oval in shape - *S.pandeyi* Nanware  
 and Jadhav, 2004  
 - Cirrus pouch pyriform - *S. globipunctata* Railliet, 1893 - Vas deferens straight tube - *S. marathwadensis*  
 Shinde *et al.*, 1985  
 Cirrus pouch oval - *S. hepatica* Wolffhugel, 1903 - Vas deferens coiled tube - *S. kotwarensis*  
 Malhotra and Capoor, 1983  
 - Ovary lobulated - *S. jadhavi* Nanware *et al.*, 2005  
 Ovary sac like - *S.capari* Patil *et al.*, 2002  
 Ovary rounded - *S. jadhavae* Jadhav, 1999  
 - Testes 5-6 in number - *S. yawalensis* Kalse *et al.*, 1999

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