

## Cestode Parasites from Some Nepalese Mountain Shrews

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### Abstract

Thirty-three mountain and house shrews belonging to four species of two genera taken at three collecting sites in Nepal were examined for cestodes. The cestodes found were: *Lineolepis soriculi* sp. nov., *Lineolepis brevis* sp. nov., *Lineolepis serrata* sp. nov., *Ditostolepis macrostrobila* sp. nov., *Staphylocystis (Staphylocystis) kunisakii* sp. nov., *Vampirolepis nepalensis* sp. nov., *Vampirolepis magniovifera* sp. nov., *Coronacanthus parvihatata* Sawada et Koyasu, 1990 and *Choanotaenia* sp. The cestode was observed in 67% of 33 shrews examined.

**Key words:** *Soriculus* spp.; *Suncus* sp.; hymenolepidid cestode; Nepal.

### Introduction

The cestode parasites of Nepalese shrews have been little known except for three species recorded by Sawada and Koyasu (1991c), and Sawada, Koyasu and Shrestha (1993), who described *Pseudhymenolepis nepalensis*, *Staphylocystis (Staphylocystis) kathmanduensis* and *S. (S.) trisuliensis* from the house shrew, *Suncus murinus*. It is therefore provable that the present paper is the first to deal with cestodes from the mountain shrews in Nepal, *Soriculus caudatus*, *S. leucops* and *S. nigrescens*.

### Materials and Methods

Thirty-three specimens of the mountain shrews, *Soriculus caudatus*, *S. leucops* and *S. nigrescens*, and the house shrew, *Suncus murinus* were captured with traps at Naya Pul, Kaski District, Gandaki Zone; Bhaisi Kharta, Kaski District, Gandaki Zone; Ghorepani, Myadgi District, Dhaulagiri Zone in the vicinities of Pokhara City, Nepal, during the period between November 11 and 15, 1994. The shrews

were autopsied as soon as they were captured, and their guts were fixed in Carnoy's fluid and maintained until examination was made in Japan. The methods used are described in the previous paper (Sawada and Koyasu, 1990). The host specimens were identified in accordance with Abe's descriptions (1971). All measurements are given in millimeters.

### Results

Eight (including seven new) species and three unidentified species of cestodes were obtained from four species of shrews. Localities of the shrews examined and their cestodes are shown in Fig. 1 and Table 1.

*Lineolepis* Spassky, 1959  
*Lineolepis soriculi* sp. nov.  
(Figs. 2–8)

Thirty-eight specimens of *Lineolepis soriculi* sp. nov. were obtained from seven specimens of Hodgson's brown-toothed shrew, *Soriculus caudatus*, captured at Bhaisi Kharka, Kaski District, Gandaki Zone and Ghorepani, Myadgi District, Dhaulagiri Zone on Nov. 11 and 13, 1994.

**Description:** Small-sized hymenolepidid; worm length 8–12 and maximum width 0.36–0.43. Stro-

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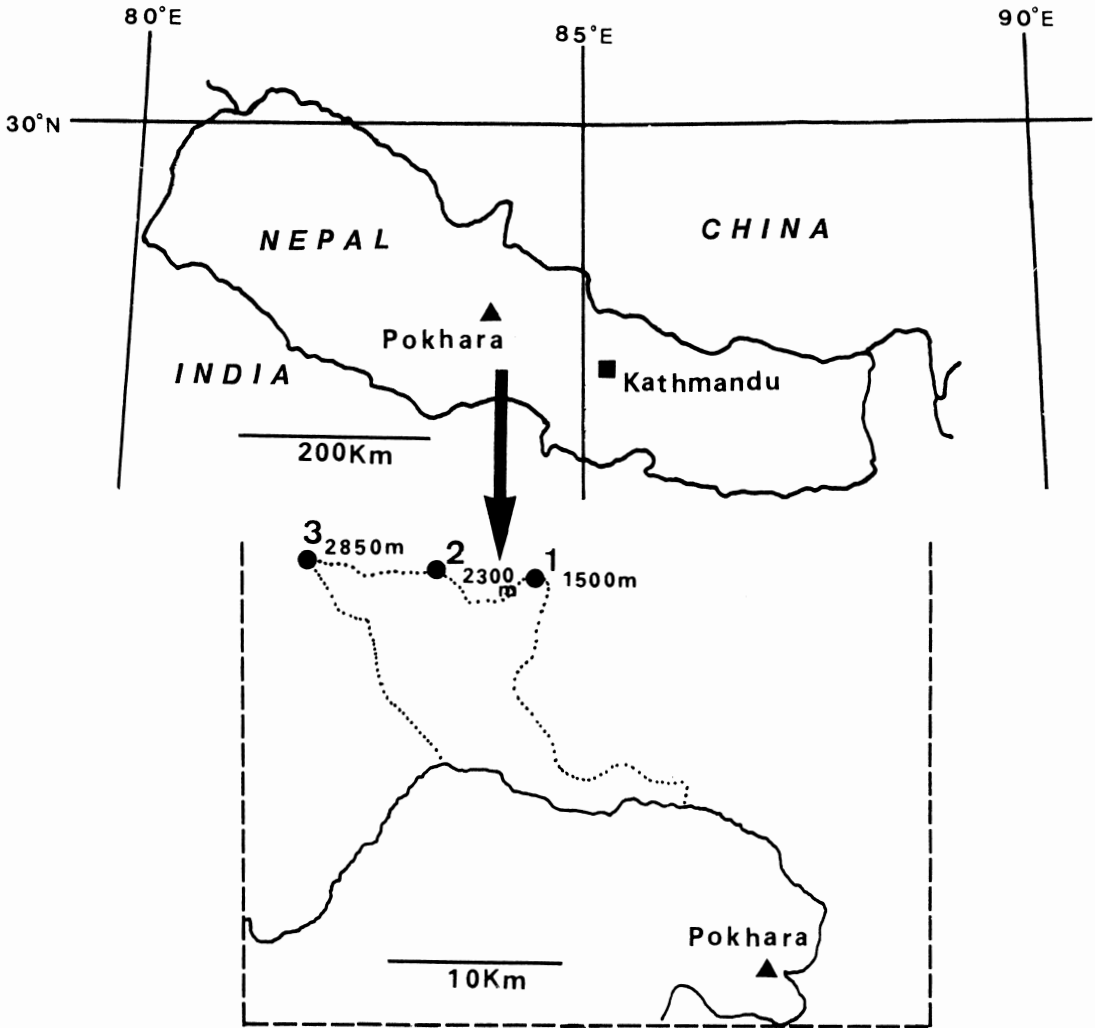


Fig. 1 A map showing the collecting sites of shrews in Nepal. For the locality number, see Table 1.

bila consisting of 52–67 segments. Immature and early mature segments wider than long; later mature segments nearly square; gravid and detached segments remarkably longer than wide. Scolex 0.245 long and 0.420–0.455 wide. Rostellum spherical, 0.091 long and 0.070 wide, armed with 8 hooks measuring 0.042–0.047 long. Rostellar sac pyriform, 0.224–0.245 long and 0.056–0.070 wide. Suckers confluent, 0.158–0.175 long and 0.070–0.077 wide. Neck 0.13–0.14 long and 0.15–0.18 wide.

Genital pores unilateral, located at anterior 1/3 of

each segment margin. Testes three in number; in immature segment, elongate, arranged in an obtuse-angled triangle; in mature segment, oval, 0.042–0.060 long and 0.025–0.028 wide, arranged in a form of triangle, two poral and one aporal. Ovary irregularly lobate, transversely elongate, 0.039–0.042 long and 0.025 wide. Vitelline gland weakly developed, 0.035–0.053 by 0.021–0.025. Cirrus sac well developed, elongate, surpassing center of segment. Cirrus armed with fine spines, 0.066–0.073 long. Internal seminal vesicle located at inner part of

Table 1 Localities and collecting dates of shrews examined, and their cestodes parasites in Nepal

Host species Locality	Date	Number of shrew			Cestode species
		examined	infected	%	
1) <i>Soriculus caudatus</i>					
(1)* Naya Pul, Kaski District, Gandaki Zone (1,500 m) <sup>†</sup>	Nov. 11	2	0	0	–
(2)* Bhaisi, Kharka, Kaski District, Gandaki Zone (2,300 m) <sup>†</sup>	Nov. 11	4	3	75	<i>Lineolepis soriculi</i> sp. nov.
	Nov. 13	3	1	3	<i>L. soriculi</i> sp. nov.
(3)* Ghorepani, Myagdi District, Dhaulagiri Zone (2,850 m) <sup>†</sup>	Nov. 13	4	3	75	<i>L. soriculi</i> sp. nov.
	Nov. 15	1	0	0	–
2) <i>Soriculus leucops</i>					
(2)* B. K. K. G.	Nov. 11	1	0	0	–
(3)* G. M. D.	Nov. 13	1	1	100	<i>Staphylocystis (Staphylocystis)</i> <i>kunisakii</i> sp. nov.
	Nov. 14	2	2	100	"
	Nov. 15	1	1	100	"
3) <i>Soriculus nigrescens</i>					
(2)* B. K. K. G.	Nov. 11	2	1	50	<i>Ditostolepis macrostrobila</i> sp. nov.
	Nov. 12	1	1	100	undetermined (no scolex)
(3)* G. M. D.	Nov. 13	2	2	100	<i>Coronacanthus parviamata</i> <i>Lineolepis serrata</i> sp. nov. <i>Vampirolepis nepalensis</i> sp. nov.
	Nov. 14	5	5	100	undetermined (rostellar hook falling off) <i>Choanotaenia</i> sp. <i>Coronacanthus parviamata</i> <i>Ditostolepis macrostrobila</i> sp. nov. <i>Vampirolepis magniovifera</i> sp. nov. <i>Lineolepis brevis</i> sp. nov.
					<i>Staphylocystis (S.) kunisakii</i> sp. nov.
					<i>Vampirolepis nepalensis</i> sp. nov. <i>Coronacanthus parviamata</i>
	Nov. 15	2	2	100	<i>Vampirolepis nepalensis</i> sp. nov. <i>Coronacanthus parviamata</i>
4) <i>Suncus murinus</i>					
(1)* N. P. K. G.	Nov. 15	1	0	0	–

\*Locality numbers correspond to those in Fig. 1; <sup>†</sup>Height above sea-level.

cirrus sac, 0.028–0.035 long and 0.014–0.018 wide. External seminal vesicle 0.070 long and 0.035–0.042 wide. Seminal receptacle 0.112–0.119 long and 0.028–0.032 wide. Egg spherical, 0.049 by 0.035, surrounded by four thin envelopes. Onchosphere spherical, 0.028–0.032 by 0.021; embryonic hook 0.007 long.

*Host*: *Soriculus caudatus* (Horsfield, 1851).

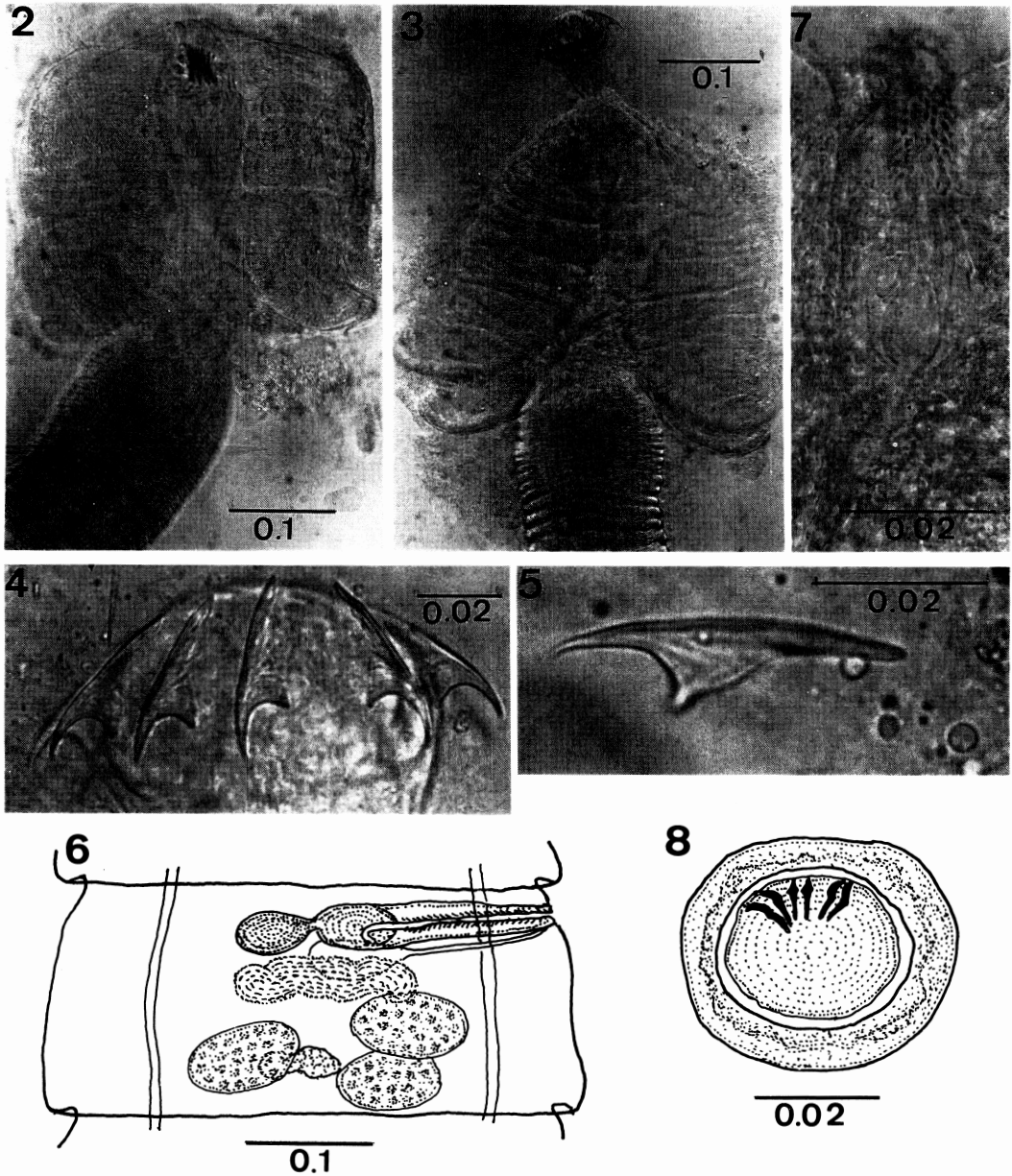
*Site of infection*: Small intestine.

*Locality and date*: Bhaisi Kharka, Kaski District,

Gandaki Zone and Ghorepani, Myagdi District, Dhaulagiri Zone; Nov. 11 and 13, 1994.

*Type specimen*: Holotype, Nara Sangyo Univ. Lab. Coll. No. 9501; paratypes, Nos. 9502–9504.

*Remarks*: The present new species closely resembles *Lineolepis skrjabini* Spassky et Morosov, 1959 from *Sorex araneus* and *Sorex* sp. in the number and length of the rostellar hook. However, the different shape of the rostellar hook separates this new species from *L. skrjabini*.



Figs. 2–8 *Lineolepis soriculi* sp. nov.

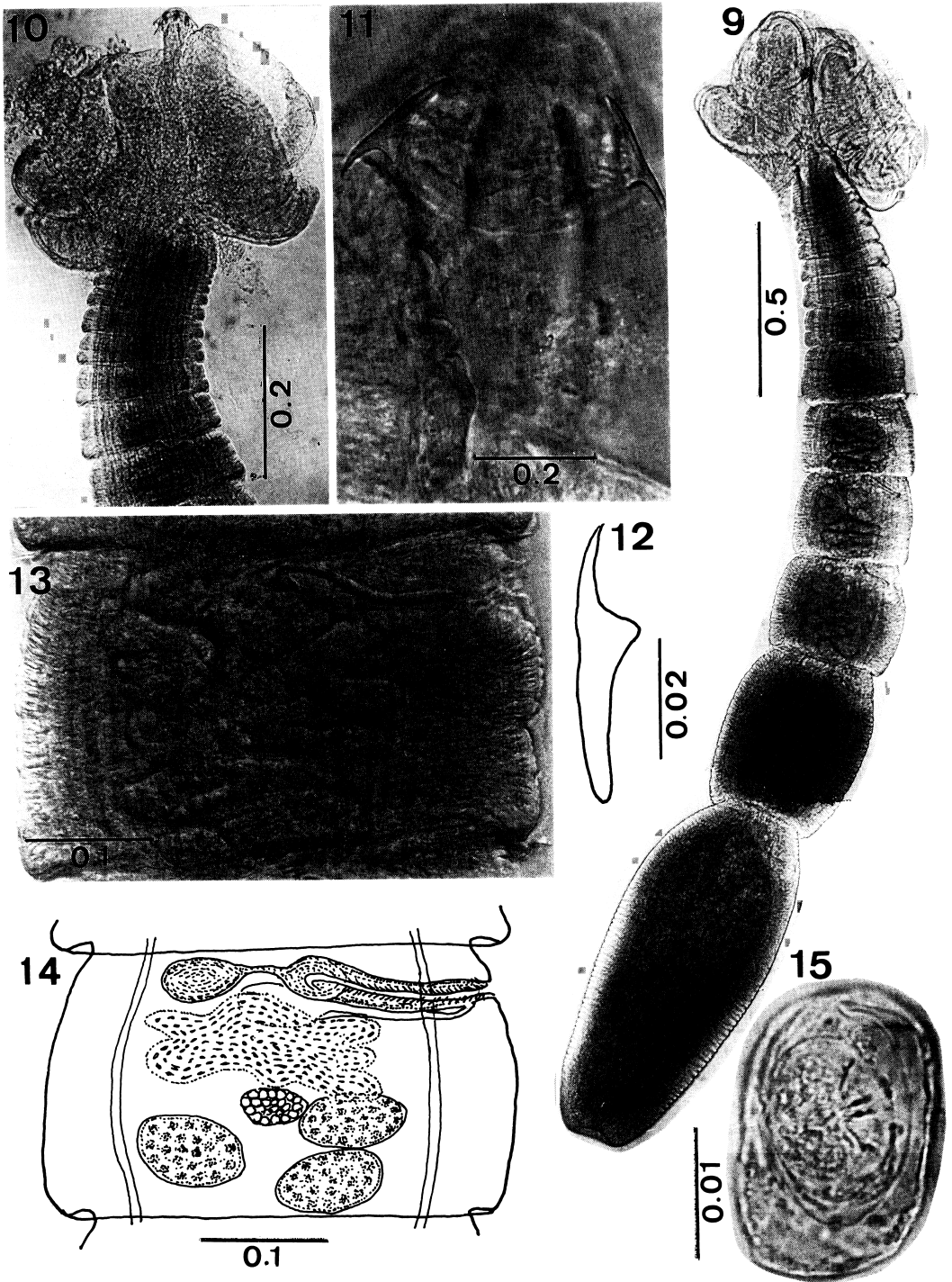
2: Scolex with rostellum invaginated. 3: Scolex with rostellum evaginated. 4: Rostellum armed with hooks. 5: Rostellar hook. 6: Mature segment. 7: Cirrus armed with delicate spines. 8: Egg. Scales in mm.

*Lineolepis brevis* sp. nov.  
(Figs. 9–15)

Two specimens of *Lineolepis brevis* sp. nov.

were obtained from an individual of the Himalayan shrew, *Soriculus nigrescens*, captured at Ghorepani, Myadgi District, Dhaulagiri Zone on Nov. 14, 1994.

*Description:* Minute-sized hymenolepidid; worm



Figs. 9–15 *Lineolepis brevis* sp. nov.

9: Entire worm. 10: Scolex. 11: Rostellum armed with hooks. 12: Rostellar hook. 13: Mature segment observed under interference contrast light microscope. 14: Mature segment. 15: Egg. Scales in mm.

length 2.5–2.6 and maximum width 0.4–0.5. Strobila consisting of 14–15 segments. Immature and early mature segments wider than long; later mature segments nearly square; gravid and detached segments remarkably longer than wide. Scolex 0.329 long and 0.469–0.483 wide. Rostellum oval, 0.049–0.056 long and 0.056–0.063 wide, armed with 8 hooks measuring 0.035 long. Rostellar sac pyriform, 0.196–0.210 long and 0.042–0.049 wide. Suckers confluent, 0.315–0.336 long and 0.140 wide.

Genital pores unilateral, located at anterior 1/3 of each segment margin. Testes three in number; in immature segment, elongate, arranged in an obtuse-angled triangle; in mature segment, oval, 0.105–0.119 long and 0.042–0.049 wide, arranged in a form of triangle, two poral and one aporal. Ovary irregularly lobate, transversely elongate, 0.147 broad. Vitelline gland compact, located just posterior to ovary. Cirrus sac well developed, elongate, surpassing center of segment, 0.098–0.126 long and 0.021–0.028 wide. Cirrus armed with minute spines. Internal seminal vesicle, oval, located at inner part of cirrus sac, 0.056–0.063 long and 0.028–0.035 wide. External seminal vesicle 0.063–0.070 long and 0.028–0.042 wide. Seminal receptacle 0.098–0.112 long and 0.028–0.035 wide. Egg elongate, 0.049 in major axis and 0.035–0.039 in minor axis. Onchosphere 0.025–0.028 by 0.021; embryonic hook 0.007 long.

*Host:* *Soriculus nigrescens* (Gray, 1842).

*Site of infection:* Small intestine.

*Locality and date:* Ghorepani, Myadgi District, Dhaulagiri Zone; Nov. 14, 1994.

*Type specimen:* Holotype, Nara Sangyo Univ. Lab. Coll. No. 9505; paratype No. 9506.

*Remarks:* The present new species closely resembles the foregoing *Lineolepis soriculi* from *Soriculus caudatus* in the number of the rostellar hook. However, it differs from that species in the shorter strobila (2.5–2.6 vs. 8–12 long; 14–15 vs. 51–56 segments), the smaller rostellar hook (0.035 vs. 0.042–0.047) and the shape of the rostellar hook (Figs. 5 and 12).

*Lineolepis serrata* sp. nov.  
(Figs. 16–21)

One specimen of *Lineolepis serrata* sp. nov. was

obtained from an individual of the Himalayan shrew, *Soriculus nigrescens* at Ghorepani, Myadgi District, Dhaulagiri Zone on Nov. 13, 1994.

*Description:* Minute-sized hymenolepidid; worm 4.6 in length and 0.7 in maximum width. Strobila consisting of 26 segments. Shape of each segment making strobila similar to those of the two foregoing new species. Scolex mushroom-shaped, 0.249 long and 0.539 wide. Rostellum oval, 0.105 long and 0.070 wide, armed with 11 hooks measuring 0.039 long. Hook short; guard prominent and serrate, shorter than blade. Rostellar sac pyriform, 0.154 long and 0.126 wide. Suckers confluent, 0.336–0.350 long and 0.175 wide.

Genital pores unilateral, located at anterior 1/3 of each segment margin. Testes three in number; in immature segment, elongate, arranged in an obtuse-angled triangle (Fig. 19); in mature segment, oval, 0.070–0.087 long and 0.049–0.063 wide, arranged in a form of triangle, two poral and one aporal. Ovary irregularly lobate, transversely elongate, 0.126–0.147 and 0.047–0.056 wide. Vitelline gland bilobate, 0.063–0.070 long and 0.028 wide. Cirrus sac well developed, elongate, surpassing center of segment, 0.105–0.112 long and 0.028–0.035 wide. Cirrus armed with minute spines. Internal seminal vesicle oval, located at inner part of cirrus sac, 0.042 long and 0.028–0.035 wide. External seminal vesicle 0.042 long and 0.028–0.035 wide. Seminal receptacle 0.091–0.105 long and 0.028–0.035 wide. Egg oval, 0.039–0.042 in major axis and 0.035–0.039 in minor axis. Onchosphere spherical or oval, 0.021–0.025 by 0.021; embryonic hook 0.007 long.

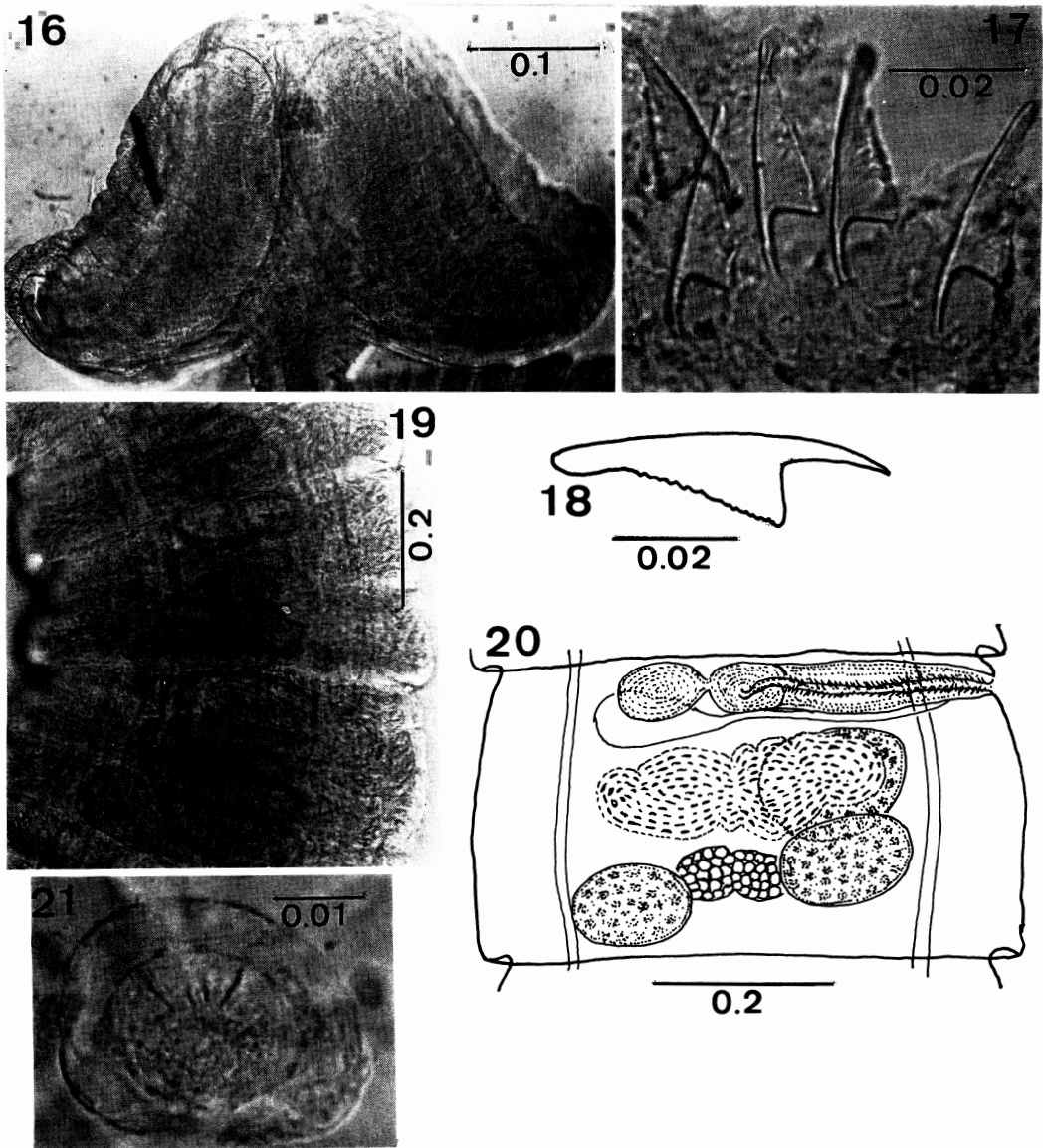
*Host:* *Soriculus nigrescens* (Gray, 1842).

*Site of infection:* Small intestine.

*Locality and date:* Ghorepani, Myadgi District, Dhaulagiri Zone; Nov. 13, 1994.

*Type specimen:* Holotype, Nara Sangyo Univ. Lab. Coll. No. 9507.

*Remarks:* *Lineolepis serrata* sp. nov. closely resembles the foregoing *L. brevis* from *Soriculus nigrescens* in the length of the rostellar hook and the arrangement of the testis. However, it differs from that species in the longer strobila (4.6 vs. 2.5–2.7), the larger number of the rostellar hooks (11 vs. 8) and the shape of the rostellar hook (Figs. 12 and 18).



Figs. 16–21 *Lineolepis serrata* sp. nov.

16: Scolex. 17: Rostellar hooks. 18: Rostellar hook magnified. 19: Immature segments. 20: Mature segment. 21: Egg. Scales in mm.

*Ditestolepis* Sołtys, 1952

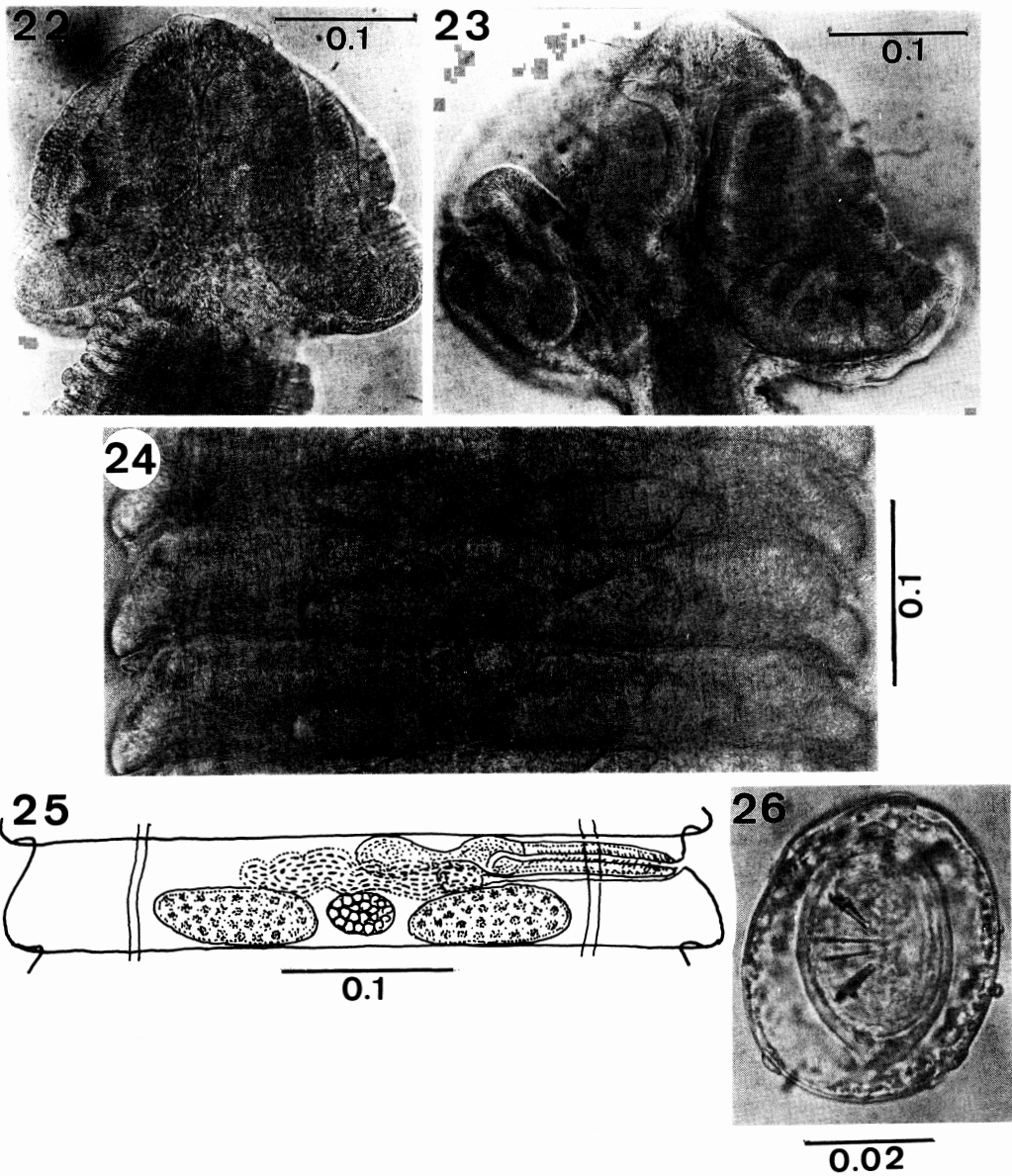
*Ditestolepis macrostrobila* sp. nov.

(Figs. 22–26)

Sixteen specimens of *Ditestolepis macrostrobila* sp. nov. were obtained from three specimens of the

Himalayan shrew, *Soriculus nigrescens*, captured at Bhaisi Kharka, Kaski District, Gandaki Zone on Nov. 11 and 14, 1994.

*Description:* Small-sized hymenolepidid; worm length 8.1–15.2 and maximum width 0.5–1.2. Metamerism distinct, margins not serrate. Strobila char-



Figs. 22–26 *Ditestolepis macrostrobila* sp. nov.

22: Scolex. 23: Confluent suckers. 24: Mature segments observed under interference contrast light microscope. 25: Mature segment. 26: Egg. Scales in mm.

acterized by a distinctly marked subdivision into three series, each of which possesses segments uniformly advanced in development. Scolex 0.280–0.336 long and 0.315–0.420 wide, sharply demarcated from short neck region. Rostellum rudimen-

tary, 0.063–0.084 long and 0.035–0.049 wide. Suckers confluent, 0.294–0.364 long and 0.175–0.182 wide.

Genital pores unilateral, located at anterior 1/3 of each segment margin. Testes two in number, elon-



gate, 0.077–0.084 long and 0.042–0.049 wide, one on each side of vitelline gland. Ovary irregularly lobate, 0.042–0.053 long and 0.025–0.028 wide. Cirrus sac elongate, surpassing center of segment, 0.112–0.126 long and 0.021–0.028 wide. Cirrus armed with delicate spines. Internal seminal vesicle located at inner part of cirrus sac, 0.049 long and 0.021 wide. External seminal vesicle 0.042–0.056 long and 0.021–0.028 wide. Seminal receptacle 0.070–0.077 long and 0.021–0.035 wide. Egg oval, 0.053–0.070 in major axis and 0.042–0.053 in minor axis, surrounded by four thin envelopes, with smooth surface. Onchosphere oval or spherical, 0.042–0.045 by 0.028–0.032; embryonic hook 0.011–0.014 long.

*Host:* *Soriculus nigrescens* (Gray, 1842).

*Site of infection:* Small intestine.

*Locality and date:* Bhaisi Kharka, Kaski District, Gandaki Zone and Ghorepani, Myadgi District, Dhaulagiri Zone; Nov. 11 and 14, 1994.

*Type specimen:* Holotype, Nara Sangyo Univ. Lab. Coll. 9508; paratypes, Nos. 9509–9510.

*Remarks:* The eight species of the genus *Ditestolepis* Sołtys, 1952 are recorded hitherto from soricines; *D. diaphana* (Cholodkovski, 1906), *D. secunda* Schaldybin, 1964, *D. longicirrosa* Sawada et Harada, 1990, *D. minuta* Sawada et Koyasu, 1991, *D. crassissaccata* Sawada et Asakawa, 1992 and *D. grandiovarum* Sawada, Harada et Koyasu, 1992. The present new species differs from all of them in the longer strobila and the larger ovary.

*Staphylocystis* Villot, 1877

*Staphylocystis (Staphylocystis) kunisakii* sp. nov.  
(Figs. 27–30)

Eleven specimens of *Staphylocystis (Staphylocystis) kunisakii* sp. nov. were obtained from four specimens of the Indian long-tailed shrew, *Soriculus leucops*, and the Himalayan shrew, *Soriculus nigrescens*, captured at Ghorepani, Myadgi District, Dhaulagiri Zone on Nov. 13–14, 1994.

*Description:* Small-sized hymenolepidid; mature worm length 9.4–10.6 and maximum width 0.3–0.4. Metamerism distinct, margins slightly serrate. Scolex round, 0.196–0.231 long and 0.315–0.350 wide. Rostellum mushroom-shaped, 0.063–0.070 long and 0.077 wide, armed with a single row of 10 chelate-shaped hooks 0.028 long. Hook handle

comparatively long; blade long, slender and pointed; guard shorter than blade. Rostellar sac well developed, pyriform, 0.203–0.231 long and 0.119–0.126 wide, extending beyond posterior margin of sucker. Sucker discoid, 0.119–0.140 by 0.105–0.126.

Genital pores unilateral, located a little anterior to middle of each segment margin. Testes three in number, spherical or oval, 0.042–0.049 by 0.035, arranged triangularly, one poral and two aporal. Cirrus sac pyriform, 0.084–0.098 long and 0.021 wide, extending beyond longitudinal excretory canals. Internal seminal vesicle 0.035–0.049 long and 0.021–0.028 wide. External seminal vesicle 0.070–0.077 long and 0.028–0.035 wide. Ovary transversely elongate, bilobate, 0.046–0.053 broad. Voluminous seminal receptacle 0.105–0.115 long and 0.028 wide. Vitelline gland compact, situated in posterior field of segment. Egg elliptical, 0.046–0.053 in major axis and 0.014 in minor axis. Onchosphere spherical or oval, 0.018 by 0.021; embryonic hook 0.011 long.

*Host:* *Soriculus leucops* (Horsfield, 1855) and *S. nigrescens* (Gray, 1842).

*Site of infection:* Small intestine.

*Locality and date:* Ghorepani, Myadgi District, Dhaulagiri Zone; Nov. 13–14, 1994.

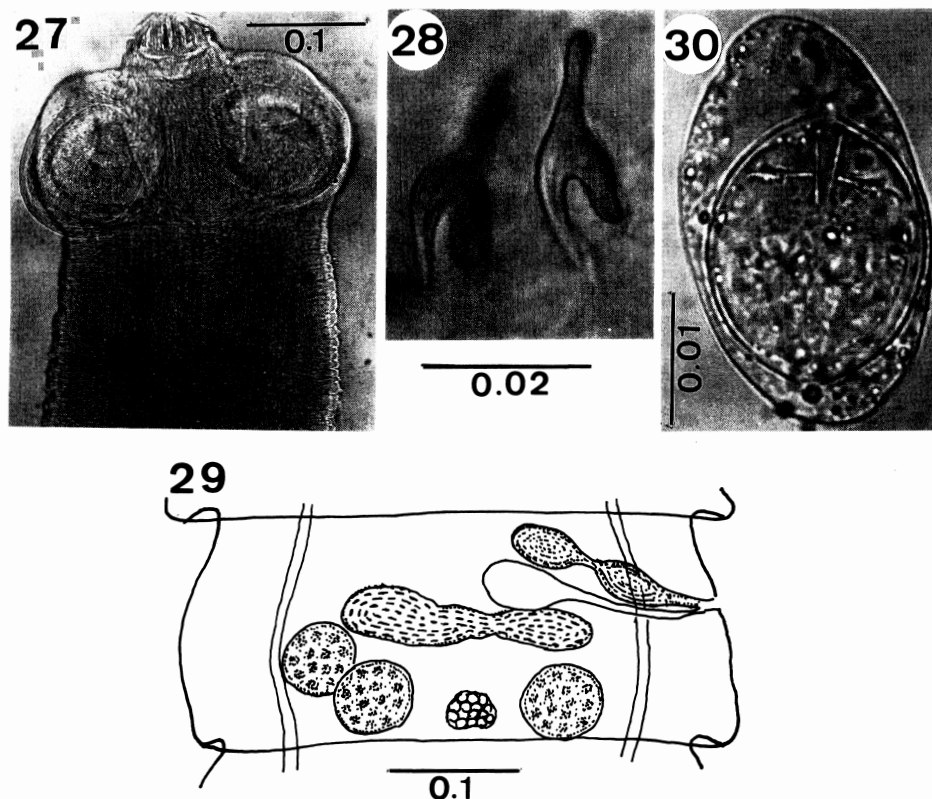
*Type specimen:* Holotype, Nara Sangyo Univ. Lab. Coll. No. 9511; paratypes, Nos. 9512–9513.

*Remarks:* Of the 27 known species of *Staphylocystis (Staphylocystis)* recorded from soricines, five: *S. (S.) scalaris* (Dujardin, 1845), *S. (S.) chrysochloridis* Janicki, 1904, *S. (S.) dodecantha* (Baer, 1925), *S. (S.) toxometra* (Baer, 1932) and *S. (S.) fuelleborni* (Hilmy, 1936) are armed with 8–15 rostellar hooks ranging in length from 0.028 to 0.040. The present new species most closely resembles *S. (S.) fuelleborni* in the number and length of the rostellar hook. However, the shape of the rostellar hook separates the new species from *S. (S.) fuelleborni* (Fig. 31).

*Vampirolepis* Spassky, 1954

*Vampirolepis nepalensis* sp. nov.  
(Figs. 32–35)

Of eight *Soriculus nigrescens* collected at Ghorepani, Myadgi District, Dhaulagiri Zone on Nov. 13–15, 1994, each of three harbored one me-



Figs. 27–30 *Staphylocystis (Staphylocyastis) kunisakii* sp. nov.  
27: Scolex. 28: Rostellar hooks. 29: Mature segment. 30: Egg. Scales in mm.

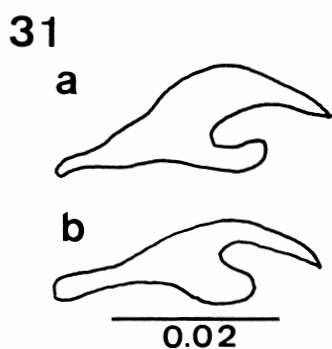


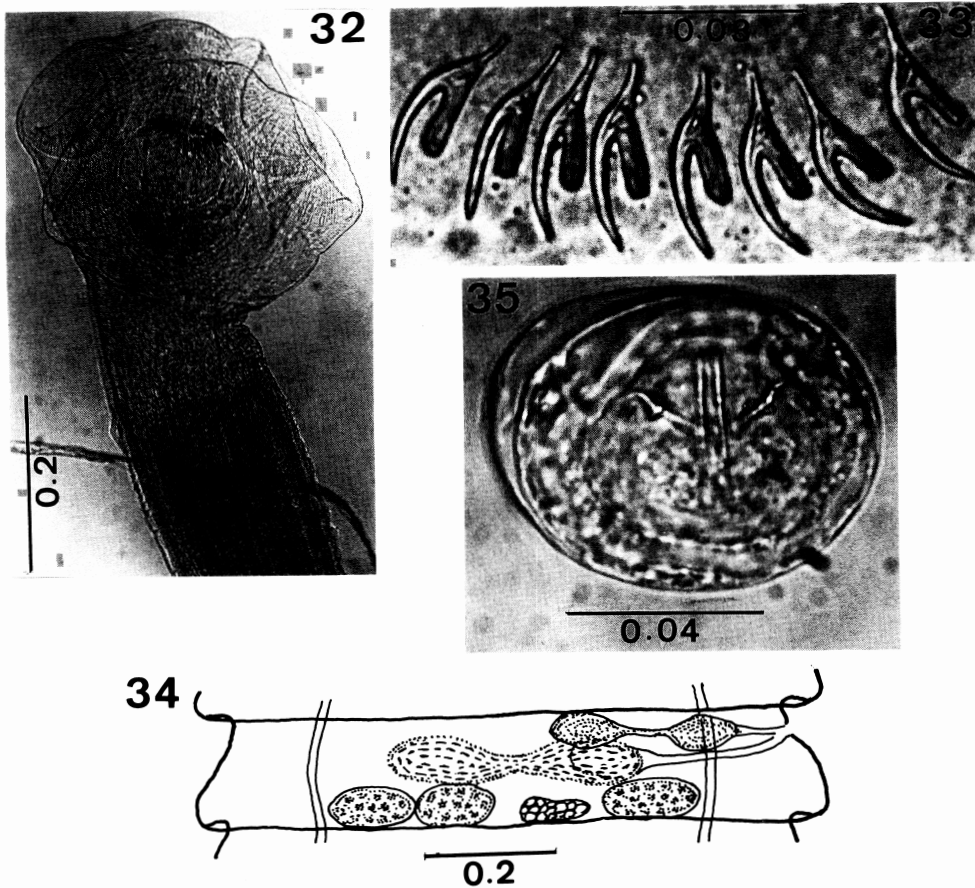
Fig. 31 Comparison of rostellar hook shapes between two species.

a: *Staphylocystis (S.) fuelleborni*, b: *Staphylocystis (S.) kunisakii* sp. nov.

dium-sized cestode belonging to the genus *Vampirolepis*.

*Description:* Medium-sized hymenolepidid; mature worm length 42–68 and maximum width 0.9–1.2. Mature and gravid segments wider than long. Scolex 0.315–0.484 long and 0.420–0.511 wide, demarcated from strobila. Rostellum 0.112–0.138 long and 0.152–0.170 wide, armed with a single row of 28–30 thorn-shaped hooks measuring 0.035 long. Hook handle short, guard prominent, round at its end, shorter than blade; blade sharp at its end. Rostellar sac 0.182–0.248 long and 0.140–0.221 wide. Sucker discoid, 0.193–0.207 long and 0.152–0.165 wide.

Genital pores unilateral, located a little anterior to middle of segment margin. Testes three in number, elongate, 0.070–0.077 long and 0.021–0.028 wide, arranged in a transverse row, one poral and two



Figs. 32–35 *Vampirolepis nepalensis* sp. nov.  
32: Scolex. 33: Rostellar hooks. 34: Mature segment. 35: Egg. Scales in mm.

aporal. Cirrus sac pyriform, 0.084–0.091 long and 0.028 wide, extending beyond longitudinal excretory canals. Internal seminal vesicle 0.042–0.049 long and 0.028 wide. External seminal vesicle 0.063–0.070 long and 0.028 wide. Seminal receptacle 0.056–0.063 long and 0.028 wide. Ovary elongate, bilobate, 0.126–0.140 broad. Vitelline gland compact, 0.042–0.049 by 0.021. Egg spherical or oval, 0.060–0.067 in major axis and 0.046–0.049 in minor axis. Onchosphere spherical, 0.035–0.039 in diameter; embryonic hook 0.018 long.

*Host*: *Soriculus nigrescens* (Gray, 1842).

*Site of infection*: Small intestine.

*Locality and date*: Ghorepani, Myadgi District, Dhaulagiri Zone; Nov. 13–15, 1994.

*Type specimen*: Holotype, Nara Sangyo Univ. Lab. Coll. No. 1914, paratype, No. 9515.

*Remarks*: In possessing 25–35 rostellar hooks in a range of 0.030–0.038 long, the present new species closely resembles *Vampirolepis alishanensis* Sawada et Koyasu, 1991 among the 31 species of *Vampirolepis* occurring in soricines. However, it differs from that species in the shape of the rostellar hook (Fig. 36).

*Vampirolepis magniovifera* sp. nov.  
(Figs. 37–40)

Of five *Soriculus nigrescens* collected at Ghorepani, Myadgi District, Dhaulagiri Zone on

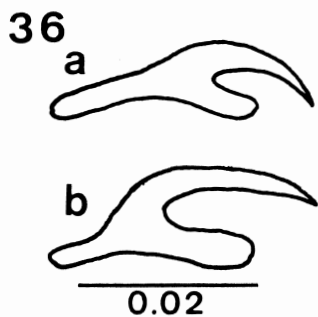
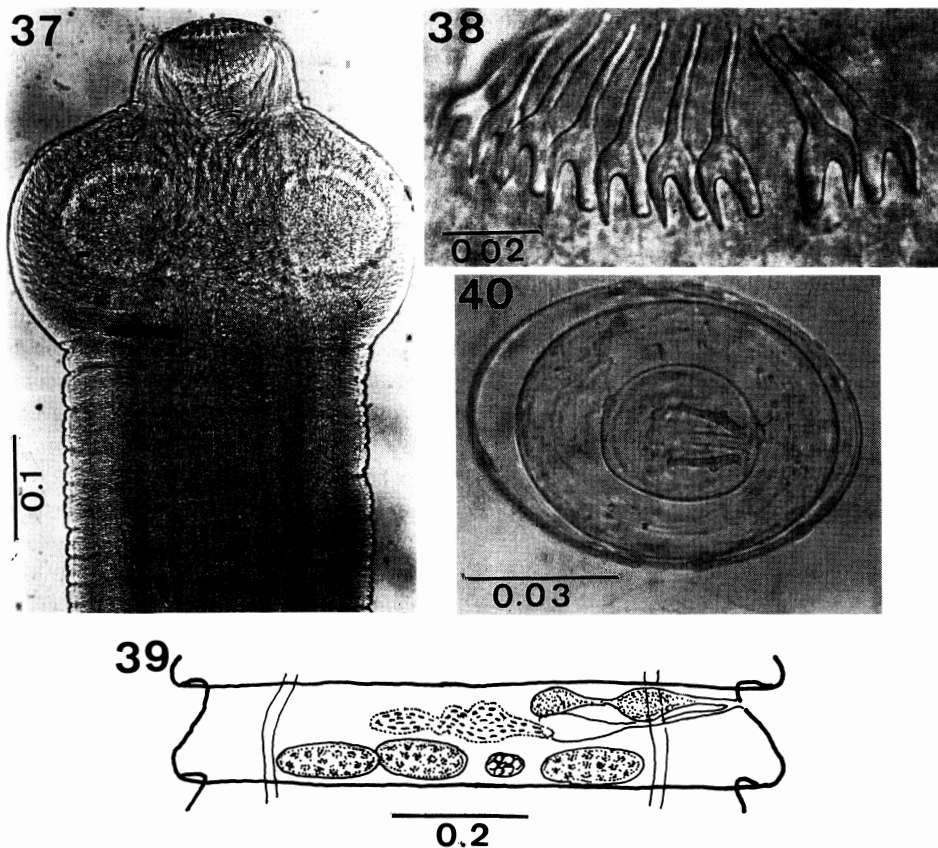


Fig. 36 Comparison of rostellar hook shapes between two species.  
a: *Vampirolepis alishanensis*. b: *Vampirolepis nepalensis* sp. nov.

Nov. 14, 1994, one harbored a small-sized cestode belonging to the genus *Vampirolepis*.

*Description:* Small-sized hymenolepidid; worm length 33 and maximum width 0.9. Mature segments wider than long. Scolex 0.276 long and 0.443 wide. Rostellum mushroom-shaped, 0.119 long and 0.119 wide, armed with a single row of 45 thorn-shaped hooks measuring 0.035 long. Hook handle long, guard prominent, round at its end, shorter than blade; blade sharp at its end. Rostellar sac 0.140 long and 0.126 wide. Sucker discoid, 0.126–0.133 in diameter.

Genital pores unilateral, located a little anterior to middle of each segment. Testes three in number, elongate, 0.112–0.119 long and 0.056 wide, arranged in a transverse row, one poral and two aporal.



Figs. 37–40 *Vampirolepis magniovifera* sp. nov.

37: Scolex. 38: Rostellar hooks. 39: Mature segment. 40: egg. Scales in mm.

Cirrus sac pyriform, 0.126–0.133 long and 0.028 wide, extending beyond longitudinal excretory canals. Internal seminal vesicle 0.042–0.049 long and 0.035–0.042 wide, occupying almost whole of cirrus sac. External seminal vesicle 0.049–0.056 long and 0.014–0.021 wide. Ovary transversely elongate, irregularly lobate, 0.210–0.224 broad. Seminal receptacle 0.098–0.105 long and 0.035–0.042 wide. Vitelline gland compact. Egg oval, outermost chorion thin, 0.075–0.081 in major axis and 0.056–0.060 in minor axis; second envelope 0.067 by 0.049–0.053; embryophore 0.032–0.035 by 0.025–0.028, with at each pole a round projection provided with polar filaments (Fig. 40). Onchosphere spherical, 0.032–0.035 by 0.025–0.028; embryonic hook 0.014 long.

*Host: Soriculus nigrescens* (Gray, 1842).

*Site of infection:* Small intestine.

*Locality and date:* Ghorepani, Myadgi District, Dhaulagiri Zone; Nov. 14, 1994.

*Type specimen:* Holotype, Nara Sangyo Univ. Lab. Coll. No. 9516.

*Remarks:* Of about 34 species of *Vampirolepis* reported from soricines, only *Vampirolepis solisoricis* Cruz et Sanmugasunderam, 1971 possesses the rostellum armed with over 40 hooks. The present form differs from *V. solisoricis* in the shorter rostellar hook (0.035 vs. 0.0492) and the shape of the rostellar hook (Fig. 41).

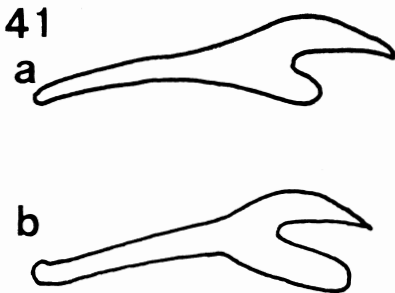


Fig. 41 Comparison of rostellar hook shapes between two species.

a: *Vampirolepis solisoricis*, b: *Vampirolepis magniovifera* sp. nov. Scales in mm.

*Coronacanthus* Spassky, 1954  
*Coronacanthus parvihamata* Sawada et

Koyasu, 1990

*Coronacanthus parvihamata* Sawada et Koyasu, 1990, pp. 194–196, figs. 15–19.

*Host: Soriculus nigrescens.* For state of infection, see Table 1.

*Choanotaenia* Railliet, 1896

*Choanotaenia* sp.

Of five *Soriculus nigrescens* collected at Ghorepani, Myadgi District, Dhaulagiri Zone on Nov. 14, 1994, two harbored a small cestode belonging to the genus *Choanotaenia*, respectively.

*Description:* Total length 16.2–17.8 and maximum width 0.7–0.9. Scolex 0.352–0.622 long and 0.490–0.692 wide. Rostellum 0.456–0.485 Long and 0.111–0.125 wide, armed with two alternate rows of 10 hooks measuring 0.119–0.126 long. Rostellar sac well developed, extending to posterior margin of sucker, measuring 0.622 long and 0.138–0.142 wide. Sucker 0.280–0.415 long and 0.210–0.356 wide. The remarkable constriction of strobila makes it impossible to render a more definite identification.

## Discussion

In the present study, six genera and eight species of cestodes have been recorded from Nepalese shrews, *Soriculus caudatus*, *S. leucops* and *S. nigrescens*, captured at the vicinities of Pokhara City, Nepal. Of these cestodes, *Coronacanthus parvihamata* Sawada et Koyasu, 1990 has been recorded from *Sorex shinto shinto* of central Honshu (Sawada and Koyasu, 1990), *Sorex sadonis* of Sado Island (Sawada and Koyasu, 1991a), *Sorex unguiculatus* of Hokkaido (Sawada and Koyasu, 1991b) and *Sorex araneus* of Novosibirsk and Altai, Russia (Sawada and Kobayashi, 1994). From the viewpoint of the host-parasite relationship between shrews and their cestodes, some shrews occurring in the vicinities of Pokhara City, Nepal seem to have some distributional connection with shrews in Japan (Hokkaido, Sado Island, Honshu) and Russia (Akademgorodok City and Altai region).

It was found that while *Soriculus caudatus* and *S. leucops* harbored one cestode parasite each,

*Lineolepis soriculi* sp. nov. and *Staphylocystis* (*Staphylocystis*) *kunisakii* sp. nov., respectively, *S. nigrescens* harbored a number of different cestodes belonging to seven species of five genera. This difference is considered to have been caused by the different diet of each of the three shrews. In other words, the diets of *S. caudatus* and *S. leucops* are limited to certain small insects (intermediate hosts), but *S. nigrescens* takes a mixed diet including a number of small insects (most of which play a role of the intermediate hosts of various cestodes) which live around human dwelling. This diet leads to the presence of a number of different cestodes.

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