PART : I

TETRAPHYLLIDEA
Tetrathyllidea Carus, 1863.
Phyllobothridae Braun, 1900.
Echeneibostrhim Beneden, 1850.

Echeneibostrhim trygoni n.sp.

INTRODUCTION

The genus Echeneibostrhim was erected by Beneden in 1850. Later on 43 species were added to this genus.

DESCRIPTION

Fifteen specimens, of the cestode parasites, were collected from the spiral valve of Trygon sephun at Ratnagiri, M.S.,(West coast of India), India; in the month of March, 1992.

The worms were white in colour, thin in musculature and long, flattened and were preserved in 4% formalin. Ten worms were stained with Harri's Haematoxylin for further anatomical studies.

The scolex is medium in size, rectangular in shape, broad anteriorly, narrow posteriorly, with constriction at 1/3rd from the posterior margin, consisting four bothridia and measures 0.978 - 1.200 in length and 0.300 to 1.003 in
breadth. The bothridia are pendunculated, bifold, leaf like, each half of it roughly triangular, wide at the base narrow at the apex, with loculi, with unequal folds and measures 1.125 in length and 0.053 to 0.743 in breadth, one bothridium is laterally flattened, where as the other three bothridia are overlapping on each other, may be due to flattening, each bothridium consists of 38 loculi (18 pairs and one loculum at each end). The loculi are small to medium in size, oval to round in shape, arranged on the lateral margin of the bothridium and measure 0.038 to 0.068 in length an d0.030 to 0.061 in breadth and 0.030 to 0.045 in diameter.

The neck is of medium length and width, slightly broader at the anterior and posterior end, narrow in the middle and measures 1.080 in length and 0.091 to 0.188 in width.

The mature segments are longer than broad, almost more than one and half times longer than broad, with slight or more convex lateral margins, without projections at the anterior and the posterior corners of the proglottids, broad anteriorly, narrow posteriorly and measure 0.466 to 0.582 in length and 0.191 to0.301 in breadth. The testes are small to large in size, round to oval in shape, 10 in number, arranged in two
laterally fields, preovarian, from anterior margin of segment to the ovary, in two rows, one row lin each half of the segment, in the central medulla, almost evenly distributed, larger testes anterior to the cirrus pouch and in the anterior half of the segment, smaller ones posterior to the cirrus pouch, in the posterior half of the same, in the central medulla, evenly distributed, bounded laterally by longitudinal excretory canals and measure 0.72 to 0.78 in diameter and 0.053 - 0.112 in length and 0.049 to 0.087 in breadth. The cirrus pouch is large in size, oval in shape, spindle shaped, in appearance, broader in the middle tapering at both the ends, situated almost just posterior to the middle of the segment, extends midally beyond the middle of the segments, transversely placed and measures 0.184 in length and 0.049 to 0.112 lin breadth. The cirrus is short, thin, stout, contained within the cirrus pouch, placed near the anterior margin of the same, near the genital pore, wider anteriorly, narrow posteriorly and measures 0.097 in length and 0.005 to 0.010 in width. The ductus ejaculatorius is wide, coiled, posterior to the cirrus pouch in the cirrus pouch and measures 0.412 to 0.437 in length and 0.010 to 0.019 in breadth. The vas deferens is thin, runs obliquely for a short distance, turns anteriorly, extends ventral to the testes anteriorly and medially, becomes wide, forms 4 to 5 coils, in the space
between the 3 pairs of testes and measures 0.097 in length and 0.005 to 0.010 in breadth.

The ovary is large in size, a single mass, indistinctly bilobed, situated near the posterior margin of the segments, extends laterally upto the corticular region of the same and measures 0.388 in length and 0.121 to 0.180 in breadth. The vagina is thin, anterior to the cirrus pouch, starts from the genital pore, extends obliquely upto 1/3rd width of the segment, takes a turn posteriorly, runs obliquely upto 2/3rd width of the segment, takes a posterior turn, enlarges and forms the receptaculum seminis, turns posteriorly, reaches and opens in to the ootype and measures 0.388 in length and 0.121 to 0.180 in breadth.

The receptaculum seminis is medium in size, oval in shape, preovarian, obliquely placed, with irregular margin, slightly lobulated, broader in the middle, tapering at both the ends, mostly in the aporal half of the segments and measures 0.141 in length an d0.015 to 0.029 in breadth. The ootype is medium in size, oval in shape, preovarian, just anterior to the ovary, centrally placed, antero posteriorly elongated and measures 0.029 in length and 0.015 to 0.024 in breadth.
The genital pores are medium in size, oval in shape, marginal, irregularly alternate, situated at the middle or just posterior to the middle, of the lateral margin of the segments and measures 0.052 in length and 0.010 to 0.019 in breadth.

The vitellaria are granular, thin strips, on each lateral side and from the anterior to the posterior margin of the segments.

The longitudinal excretory canals are thin and measure 0.015 in breadth.

**DISCUSSION**

The genus *Echeneibothrium* was erected by Beneden in 1850. Later on 43 species were added to this genus. After going through the literature, the worm under discussion, comes closer to *E. variabile* Beneden, 1850 *E. fallax* Beneden, 1875, *E. flexile* Linton, 1890, *E. macrosum* Riser, 1955, *E. multiloculatum* Joan Carvajal and Murray 0. Dailey, 1974 and *E. smithii* Shinde and jadhav, 1981 after considering the number of loculi in eachbothridium.

In having 38 loculi (18 pairs + 1 loculi on each side) longitudinally, the worm under discussion, differs from *E. variabile* (10 loculi), *E. fallax* (18 loculi), *E. flexile* (More or less 40 loculi, in 20 pairs, arranged in
two longitudinal series), *E. mucrosum* (10 loculi, in 4 pairs, arranged in 2 longitudinal series and rest of two, each one on either side of series), *E. multiloculatum* (20 loculi, in 9 pairs and rest of two, each one on either side of series) and *E. smithii* (7 loculi, in a row).

In having 10 testes, the present cestode, differs from *E. variable* (28 testes), *E. fallax* (20 testes), *E. flexile* (16–26 testes), *E. macrosum* (20–23 testes), *E. multiloculatum* (17 round to oblong testes) and *E. smithii* (22 to 24 testes).

In having ovary large, indistinctly bilobed, differs from *E. variabile* ('H' shaped), *E. fallax* ('H' shaped), *E. flexile* ('U' shaped), *E. macrosum* ('W' shaped, with lobes triangular), *E. multiloculatum* ('M' shaped) and *E. smithii* ('H' shaped).

In having the vitellaria granular, thin strips, corticular, differs from *E. variable* (follicular, in 3 rows), *E. fallax* (follicular, in 2 rows), *E. flexile* (follicular, at the sides of the testicular fields, in a single row), *E. macrosum* (Small follicles, on either side of testicular fields and ovary), *E. multiloculatum* (follicular, in 1–2 rows) and *E. smithii* (Granular, in corticular parenchyma).
Echeneibothrium *trygoni* n.sp.

Plate No. 1

A  Scolex

B  Mature segments
In having the genital pores, situated at the middle or just posterior to the middle, of the lateral margin in the segments, the present cestode, differs from *E. variable* (at one third from the anterior margin of the segments), *E. fallax* (at about middle of the margin), *E. flexile* (at about middle of the segment), *E. macrosum* (in the middle of the margin of the segment and *E. smithii* (at about middle of the margin).

In view of the differentiating characters, there is no other way to the author, than to erect a new species, for the present worms and hence the name *Echeneibothrium trygoni* n.sp. is proposed, after the generic name of the host.

<table>
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<tr>
<th>Type species</th>
<th>Echeneibothrium <em>trygoni</em> n.sp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host</td>
<td><em>Trygon sephen.</em></td>
</tr>
<tr>
<td>Habitat</td>
<td>Spiral valve.</td>
</tr>
<tr>
<td>Locality</td>
<td>Ratnagiri,M.s., (West coast of India), India.</td>
</tr>
<tr>
<td>Date of collection</td>
<td>24th Mach, 1992.</td>
</tr>
</tbody>
</table>
Eucestoda

Tetrathyllidea
Carus, 1863.

Phyllobothriidae
Braun, 1900.

Phyllobothrium
Beneden, 1849.

Phyllobothrium gracile Wedl, 1855.

DESCRIPTION

Nineteen specimens, of the cestode parasites, were collected from the spiral valve, of a marine fish, Trygon sephens at Bombay, M.S., (West coast of India), India, in the month of March, 1992.

The worms were flattened, preserved in 4% formalin, stained with Harris haematoxylin and whole mount slides were prepared, for further anatomical studies.

The cestodes were thin, with scolex, numerous immature and mature proglottids.

The scolex is distinctly marked off from the strobila, large in size, almost globular in shape, with irregular margin, with four bothridia, which are sessile, over lapping on each other and measures 0.180 in length and 0.681 to 0.188 in breadth. Each bothridium is large in
size, almost triangular in shape, overlapping on each other, broad anteriorly, narrow posteriorly, each with a single accessory sucker and measures 0.758 to 1.212 in length and 0.273 to 0.758 in breadth. The accessory suckers are medium in size, oval in shape, almost at the corners, arranged in two pairs, one pair in each half of the scolex, accessory suckers of each pair obliquely placed and measure 0.159 to 0.174 in length and 0.162 to 0.205 in breadth.

The scolex is followed by a long neck, which is wide, slightly narrow anteriorly and curved, broad posteriorly and measures 0.910 in length and 0.273 to 0.758 in breadth.

The mature segments are longer than broad, almost one to one and half times longer than broad, with convex, or concave lateral margins, with slight projections at the posterior corners of the segments and measure 1.463 in length and 0.262 to 0.481 in breadth. The testes are small in size, oval in shape, preovarian, in two lateral fields, 57 in number, 24 in poral fields, 33 in apaoral field, situated from ovary to anterior margin in aporal field and
from ovary to the cirrus pouch in poral field, in the central medulla, in each half of the segments, evenly distributed, bounded laterally by longitudinal excretory canals and measure 0.029 to 0.019 in length and 0.024 to 0.019 in breadth. The cirrus pouch is medium in size, oval in shape, transversely placed, extends medially up to 1/3rd width of the segments, near the anterior margin of the segments, at 1/5th to 1/6th from the anterior margin of the same, opens marginally, irregularly alternate, posteriorly directed and measures 0.160 in length and 0.049 to 0.033 in breadth. The cirrus is thin, slightly curved, contained within the cirrus pouch and measures 0.155 in length and 0.010 to 0.015 in breadth. The vas deferens is thin, short, posteriorly directed and measures 0.107 in length and 0.005 to 0.010 in breadth.

The ovary is large in size, almost V shaped in appearance, lobes compact, situated near the posterior margin of the segments and measures 0.485 in length and 0.034 to 0.058 in breadth. The ovarian lobes are large in size, oval but triangular in shape, anteriorly directed, wide anteriorly, narrow posteriorly, extend laterally up to the corticular or subcorticular regions of the segments and measure 0.0214 to 0.267 in length and 0.053 to 0.083, in
width. The vagina is wide, posterior to the cirrus pouch, starts from the genital pore, at middle of the segments, takes a turn to the posterior side, runs obliquely in the middle of the segments, enlarges anterior to the ovary, reaches and opens in to the ootype and measures 0.425 in length and 0.024 to 0.049 in breadth. The ootype is medium in size, oval in shape, postero ventral to the ovary, antero posteriorly elongated, slightly obliquely placed, near the posterior margin of the segments and measures 0.044 in length and 0.024 to 0.029 in width.

The genital pores are small in size, oval in shape, marginal, irregularly alternate, at 1/5th to 1/6th from the anterior margin of the segments and measure 0.043 in length and 0.019 to 0.029 in breadth.

The vitellaria are granular, strips of medium width, on each lateral side and from the anterior to the posterior margin of the segments.

DISCUSSION

The genus *Phyllobothrium* is erected by Beneden, 1849 as type species *Phyllobothrium lactuca* from *Mustelus vulgaris* from Atlantic, India and Pacific oceans, later on many species are added to this genus, by different workers in the world.
The worm under discussion, after considering the number of testes, comes closer to *Phyllobothrium gracile* Wedle, 1855. The present cestodes resemble it, in many characters, but differ from the same, in few characters, which are known as additional characters, as follows:

1. The present tapeworm, differs from *Phyllobothrium gracile* Wedl, 1855 in the number of testes (57 as against 60).

2. The present cestode, differs from it, in the size, the position of cirrus pouch shape and in the position of cirrus pouch (medium, oval at 1/5th to 1/6th from the anterior margin of the segments as against longer and globular).

3. The present worms, differs from the same, in the size, shape, and structure of the ovary (large, 'V' shaped in appearance, lobes compact as against bilobed).

As the characters are minor, it is redescribed here, as *Phyllobothrium gracile* Wedl, 1855, Wedl in 1855 reported his worms from *Torpeda marmorata* from Europe; were as the
Plate No.2

Phyllobothrium gracile, Wedl, 1855

A: Scolex
B: Mature segments
present worms, are being reported from *Trygon sephen* from Bombay, M.S., (West coast of India), India.

<table>
<thead>
<tr>
<th>Type species</th>
<th>Phyllobothrium grecile Wedl, 1855.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host</td>
<td><em>Trygon sephen.</em></td>
</tr>
<tr>
<td>Habitat</td>
<td>Spiral valve.</td>
</tr>
<tr>
<td>Locality</td>
<td>Bombay, M.S., (West coast of India), India.</td>
</tr>
</tbody>
</table>

T-etrathyllidea Carus, 1863.

Phyllobothridae Braun, 1900.

Phyllobothrium Beneden, 1849.

Phyllobothrium chiloscylli Subhapradha, 1955.

DESCRIPTION

Twenty specimens, of the cestode parasites, were collected from the spiral valve of Corcharias acutus Muller and Henle, 1906 at Ratnagiri, M.S., (West coast of India), India, in the month of April, 1992.

These worms were flattened, preserved in 4% formalin, stained in Harris Haematoxylin and whole mount slides were prepared, for further anatomical studies.

The cestodes were thin, small, short, with scolex, immature and mature proglottids.

The scolex is small in size, quadrangular in shape, with irregular margin, distinctly marked off from the strobila, narrow anteriorly, broad postteriorly and measures 0.185 to 0.412 in length and 0.216 to 0.374 in breadth. It consists of four bothridia, each bothridium is flattened, petal like, quadrangular in shape, each having one
accessory sucker and measure 0.155 to 0.216 in length and 0.112 to 0.155 in breadth. The accessory suckers are four in number, small in size, oval in shape, arranged in two pairs, one pair in each half of it, almost equidistantly placed and measure 0.044 in length and 0.024 to 0.034 in breadth.

The scolex is followed by the neck, which is medium in length, thin, narrow anteriorly, slightly broader posteriorly, curved and measures 0.665 in length and 0.078 to 0.121 in breadth.

The mature segments are longer than broad, almost 4 to 5 times longer than broad, with slight projections at the posterior corners of the segments, broad in the middle, tapering at both the ends, with straight or irregular lateral margins and measure 1.078 in length and 0.155 to 0.265 in breadth. The testes are medium in size, oval in shape, 69 to 70 in number, preovarian, in two rows in a single row on each lateral side, from ovary to the anterior margin of the segments, arranged in a single field, in the central medulla, almost evenly distributed, bounded laterally by longitudinal excretory canals, transversely or obliquely placed and measure 0.049 to 0.053 in length.
and 0.029 to 0.049 in breadth. The cirrus pouch is large in size, oval in shape, slightly anteriorly directed, curved, placed almost at 1/4th to 1/5th from the anterior margin of the segments, extends medially beyond the middle of the segments and measures 0.155 in length and 0.063 to 0.097 in breadth. The cirrus is wide, coiled, stout, contained within the cirrus pouch and measures 0.201 in length and 0.010 to 0.019 in breadth. The as deferens is thin, slightly coiled, posteriorly directed and measures 0.241 in length and 0.005 to 0.010 in breadth.

The ovary in medium in size, 'V' shaped in appearance, indistinctly bilobed, with irregular margin, near the posterior margin of the proglottids, lobes extend anteriorly and measures 0.456 in length and 0.049 to 0.121 in breadth. The ovarian lobes are almost oval and triangular in shape, broad anteriorly, narrow posteriorly, unequal in size and shape, poral lobe longer and wide, where as the aporal lobe short and narrow.

The vagina is wide, a long tube, posterior to the cirrus pouch, starts from the genital pore, extends obliquely up to the centre of the segment, takes a posterior tu-rn, runs in the middle of the segments, reaches and opens into the ootype and measures 1.029 in length and
0.010 to 0.044 in breadth. The ootype is medium in size, oval in shape, preovarian, situated in between the ovarian lobes, obliquely placed, anteroposteriorly elongated and measures 0.039 in length and 0.015 to 0.024 in breadth.

The genital pores are small in size, oval in shape, marginal, irregularly alternate, situated at 1/4th to 1/5th from the anterior margin of the segments and measure 0.024 in length and 0.019 to 0.015 in breadth.

The vitellaria are granular, thin strips, on each lateral side, in the corticular region and from the anterior to the posterior margin of the segments.

The longitudinal excretory canals are narrow and measure 0.010 in width.

DISCUSSION

The genus Phyllobothrium is erected by Beneden, 1849 as type species Phyllobothrium lactuca from Mus–talus vulgaris from Atlantic, Indian and Pacific Oceans, later on many species, are added under this genus, by different workers, in the world.

The worm under discussion, after considering the number of testes, comes closer to Phyllobothrium...
chiloscylii Subhapradha, 1955. The present cestodes resemble it, in many characters, but differ from the same, in few characters, which are known as additional characters, as follows:

1. The present tapeworm, differs from Phyllobothrium chiloscylii Subhapradha, 1955 in the number of testes (69 to 70 as against 55-70).

2. The present cestodes, differs from it, in the size and position of the vagina (large, wide, posterior to the cirrus pouch as against anterior to the cirrus pouch).

3. The present worms, differs from the same in the size, and structure of the ovary (medium in size, 'V' shaped, indistinctly bilobed as against bilobed, 'H' shaped).

As the characters are minor, it is redescribed here, as Phyllobothrium chiloscylii Subhapradha, 1955. Subhapradha in 1955 reported her worms from Madras, T.N., (East coast of India), India,; where as the present
Plate No. 3

Phyllobothrium chiloscyllii Subhapradha, 1955

A: Scolex

B: Mature segments
worms, are being reported from *Carchiarias acutus* from Ratnagiri, M.S., (West coast of India), India.

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<th>Type species</th>
<th><em>Philobothrium chilocylli</em></th>
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<td>Subhapradha, 1955.</td>
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<td>Host</td>
<td><em>Carchiarias acutus.</em></td>
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<td>Habitat</td>
<td>Spiral valve.</td>
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<td>Locality</td>
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</tr>
<tr>
<td>Date of collection</td>
<td>14th April, 1992.</td>
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Tetrathyllidea Carus, 1803.
Phyllobothr idae Braun, 1900.
Phyllobothrium Beneden, 1849.

**Phyllobothrium foliatum** Linton, 1890.

**DESCRIPTION**

Fifteen specimens, of the cestode parasites, were collected from the spiral valve of *Carcharias acutus* Muller and Henle, 1906 at Ratnagiri, M.S., (West coast of India), India, in the month of May, 1991.

The worms were flattened, preserved in 4% formalin, stained with Harris haematoxylin and whole mount slides were prepared, for further anatomical studies.

The cestodes were thin, long, with scolex, immature and mature proglottids.

The scolex is very small in size, almost triangular in shape, broad anteroarly, narrow posteriorly, with irregular margin, with four sessile, petal like bothridia, which are with irregular margin, wide anteriorly, narrow posteriorly and measure 0.243 in length and 0.078 to 0.316
in breadth. The bothridia are medium in size, triangular in shape, sessile, overlapping on each other, each with one accessory sucker and measure 0.257 in length and 0.058 to 0.194 in breadth. The accessory suckers are four in number, small in size, round in shape, almost at the corner, one for each bothridium and measure 0.049 in diameter.

The scolex is followed by a long neck, which is very thin, narrow at the middle, slightly wide anteriorly, much wider posteriorly and measures 4.344 in length and 0.010 to 0.107 in breadth.

The mature segments are longer than broad, almost 4 times longer than broad, with straight or slightly convex lateral margins, without projections at the anterior and the posterior corners of the segments, slightly wide anteriorly, narrow posteriorly, long, rectangular in appearance and measure 0.946 in length and 0.218 to 0.252 in breadth. The testes are small in size, follicular, oval and round in shape, 110 – 120 (116) in number, preovarian, in a single field, unequal in size, evenly distributed, in the central medulla, from ovary to the anterior margin of the segments, bounded laterally by longitudinal excretory canals and measure 0.015 to 0.024 in length and 0.015 to
0.015 in breadth and 0.015 to 0.019 in diameter. The cirrus pouch is medium in size, oval in shape, submarginal in position, opens submarginally, irregularly alternate, anteriorly directed and curved almost at 1/3rd from the anterior margin of the segments or just anterior to the middle of the same, extends medially upto the middle of the same, curved anteriorly and measures 0.194 in length and 0.072 in to 0.0102 in breadth. The cirrus is slightly wide, curved, anteriorly directed, contained within the cirrus pouch and measures 0.120, in length and 0.015 to 0.019 in breadth. The vas deferens is short, a thin tube, extends anteriorly and measures 0.092 in length, and 0.010 to 0.015 in breadth.

The ovary is small in size, distinctly bilobed, follicular in shape, extends up to the longitudinal excretory canals laterally, with irregular margin, near the posterior margin of the proglottids and measures 0.097 in length and 0.146 to 0.150 in breadth. The ovarian lobes are unequal in shape and size, poral lobe small, aporal lobe large and each with 4-6 short, large, pointed, triangular acini. The vagina is a thin tube, long, anterior to the cirrus pouch, starts from the genital pore, extends anteriorly, runs obliquely, turns medially, then takes a turn to the posterior side, runs in the middle of the
segments, reaches and opens into the ootype and measure 0.752 in length and 0.005 to 0.019 in breadth. The ootype is large in size, oval in shape, postovarian, situated near the posterior margin of the segments, obliquely placed, anteroposteriorly elongated and measures 0.013 in length and 0.024 to 0.034 in breadth.

The genital pores are large in size, oval in shape, wider than long, submarginal in position, irregularly alternate, situated just anterior to the middle of the segments and measure 0.078 in length and 0.019 to 0.024 in breadth.

The vitellaria are granular, strips of medium width, on each lateral side, in the corticulur region and from the anterior to the posterior margin of the proglottids.

The longitudinal excretory canals are medium in width and measure 0.019 in width.

**DISCUSSION**

The genus Phylllobothrium is erected by Beneden, 1849 as type species Phylllobothrium lactuca from Mustelue vulgaris from Atlantic, India and Pacific oceans. Later on many species are added under the genus by different workers, inthe world.
The worm under discussion, after considering the number of testes, comes closer to *Phyllobothrium foliatum* Linton, 1890, the present cestodes resemble it, in many characters, but differ from the same, in few characters, which are known as additional characters, as follows:

1. The present worm, differs from *Phyllobothrium foliatum* in the size and shape of the scolex (very small, triangular in shape as against large).

2. The present tapeworm, differs from the same, in the number of testes (110 - 120 (116) as against 125).

3. The present cestode, differs from it, in the size, shape and the position of the cirrus pouch (medium, oval at 1/3rd from the anterior margin of the segments as against cirrus armed with spinules.)

As the characters are minor, it is redescribed here, as *Phyllobothrium foliatum* Linton, 1890. Linton in 1890 reported his worms from *Phynchobatus djeddensis* from Dry Tortugas; where as the present worms, are being reported
Phyllobothrium foliatum Linton, 1890

A) Scolex
B) Mature segments
from *Carcharias acutus* from Ratnagiri, M.S., (West coast of India), India.

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<thead>
<tr>
<th>Type species</th>
<th>Phyllobothrium foliatum</th>
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<tbody>
<tr>
<td>Linton, 1890.</td>
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<table>
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<tr>
<th>Host</th>
<th><em>Carcharias acutus</em>.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat</td>
<td>Spiral valve.</td>
</tr>
<tr>
<td>Locality</td>
<td>Ratnagiri, M.S.,(West coast of India), India.</td>
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</tbody>
</table>

| Date of collection | 1st May, 1991. |
Eucestoda


Tetrathyrididea

Carus, 1863.

Phyllobothriidae

Braun, 1900.

Phyllobothrium

Beneden, 1849.

Phyllobothrium radioductum Maire, Weir Kay, 1942.

DESCRIPTION

Eleven specimens, of the cestode parasites, were collected, from the spiral valve of a marine fish, Carcharias acutus Muller and Henle, 1906 at Ratnagiri, M.S. (West coast of India), India; in the month of March, 1991.

These worms were flattened, preserved in 4% formalin, stained in Harris haematoxylin and whole mount slides were prepared, for further anatomical studies.

The parasites were thick, with thick musculature, long, with scolex, numerous immature and mature proglottids.

The scolex is medium in size, globular in shape, with irregular margin, bears four, petal like, sessile bothridia, broad anteriorly, narrow posteriorly and measures 0.369 in length and 0.296 to 0.417 in breadth. Each bothridium is narrow proximally, wide distally, having an accessory sucker at
anterior or middle region, forming a single row of loculi, each with 12 loculi along the margin and measures 0.170 to 0.267 in length and 0.102 to 0.238 in breadth. The accessory suckers are four in number, small in size, round in shape, one in each bothridium, arranged in two pairs, one pair in each half of it, equidistantly placed and measures 0.024 to 0.029 in diameter.

The scolex is followed by the long neck, which is wide, narrow anteriorly, broad posteriorly, with straight or irregular margin and measures 1.253 in length and 0.146 to 0.209 in breadth.

The mature segments are longer than broad, almost 3 to 4 times longer than broad, cylindrical in appearance, with concave or convex lateral margins, without projections at the anterior and the posterior corners of the segments and measure 1.010 in length and 0.223 to 0.0267 in breadth. The testes are small to medium in size, oval in shape, 102 in number, preovarian, arranged in a single field, from the anterior margin of the segments to the ovary, except cirrus pouch region, in 2-3 rows on each lateral side of vagina, up to cirrus pouch and in 4-6 rows anterior to it, in the central medulla, evenly distributed, unequal in size and measure 0.015 to 0.029 in length and 0.019 to 0.039 in breadth. The cirrus pouch is medium in size, oval in shape, opens marginally, slightly
anteriorly directed, placed almost at 1/4th from the anterior margin of the segments and measures 0.097 in length and 0.039 to 0.049 in breadth. The cirrus is thick, curved, coiled, contained within the cirrus pouch and measures 0.102 in length and 0.010 to 0.015 in breadth.

The vas deferens is short, a thin tube, extends to the posterior side and measures 0.097 in length and 0.005 to 0.010 in breadth.

The ovary is medium in size, 'U' shaped, in appearance, compact, a single mass, placed in the posterior margin of the segments, limbs of ovary extend anteriorly and measures 0.437 in length and 0.029 to 0.049 in breadth. The vagina is a thin tube, long, anterior to the cirrus pouch, starts from the genital pores, extends obliquely, up to 1/3rd width of the segments, turns posteriorly, runs obliquely and medially, runs posteriorly, in the middle of the segments, reaches and opens in to the ootype and measures 0.258 in length and 0.010 to 0.019 in breadth. The ootype is large in size, oval in shape, preovarian, situated in between the ovarian lobes, in its concavity, antero posteriorly elongated, places near the portal lobe, on its inner side and measures 0.067 in length and 0.024 to 0.034 in breadth.
The genital pores are medium in size, oval in shape, marginal and measure 0.027 to 0.043 in length and 0.019 to 0.024 in breadth.

The vitellaria are granular, thin strips, on each lateral side, in corticular regions and from anterior to the posterior margin of the proglottids.

The longitudinal excretory canals are medium and measure 0.010 in breadth.

**DISCUSSION**

The genus *Phyllobothrium* is erected by Beneden, 1849 as type species *Phyllobothrium lactuca* from *Mustelus vulgaris* from Atlantic, Indian and Pacific ocean. Later on many species are added to this genus, by different workers, in the world.

The worm under discussion, after considering the number of testes, comes closer to *Phyllobothrium radioductum* Maire Weir Kay, 1942. The present cestode resembles it, in many characters, but differs from the same, in few characters, which are known as additional characters, as follows:

1. The worm under discussion, differs from *Phyllobothrium radioductum* Marie Weir Kay, 1942 in the structure of the bothridia (patel like, sessile, loculi 12 in number in each bothridium, in a single row, Vs. sessile, leaf like and loculi 15 to 18 in number).
Plate No. 5

Phyllobothrium *radioductum* Maire, Weir Kay, 1942

A) Scolex
B) Mature segment
2. The present tape worm, differs from it, in the number of testes (102 Vs. 100).

3. The present cestode, differs from the same, in the structure of the ovary, (medium, 'U' shaped in appearance and compact Vs. 'U' shaped, in appearance and with short, Oval acini).

As the characters are minor, it is redescribed here, as *Phyllobothrium radiaductum* Maire Weir Kay, 1942. Maire Weiry Kay in 1942 reported his worm, from *Raja binoculutum* from California, U.S.A.; where as the present worm, are being reported from *Charchaiae acutus* at Ratnagiri, M.S., (West coast of India), India.

<table>
<thead>
<tr>
<th>Type species</th>
<th><em>Phyllobothrium radiaductum</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Host</td>
<td><em>Carchairas acutus</em></td>
</tr>
<tr>
<td>Habitat</td>
<td>Spiral valve</td>
</tr>
<tr>
<td>Locality</td>
<td>Ratnagiri, M.S., (West coast of India), India.</td>
</tr>
<tr>
<td>Date of collection</td>
<td>15th March, 1991.</td>
</tr>
</tbody>
</table>
Tetraphyllidea     Carus, 1863.
Oncobothridae      Braun, 1900.
Acanthobothrium    Van Beneden, 1849.

**Acanthobothrium guptai** n.sp.

**DESCRIPTION**

Nine specimens, of the cestode parasites, were collected from the spiral valve of a marine fish, *Trygon sephen* Cuvier, 1871 at Bombay, M.S., (West coast of India), India, in the month of March, 1992.

The worms were flattened, preserved in 4% formalin, stained with Harris haematoxylin and whole mount slides were prepared, for further anatomical studies.

The worms were thin, with scolex, numerous immature and mature proglottids.

The scolex is large in size, almost globular in shape, distinctly marked off from the strobila, bears four bothridia and measures 0.168 in length and 0.388 to 0.572 in breadth. The bothridia are large in size, oval in shape, arranged in two pairs, one pair in each half of it, overlapping on each other in each pair, each bothridium with one accessory suckers, divided in to three loculi, by
two transverse septa and measures 0.310 in length and 0.107 to 0.209 in breadth. The accessory suckers are small in size, oval in shape, transversely elongated and measures 0.019 in length and 0.029 to 0.043 in breadth. The anterior loculus of each bothridium is broader and longer than the middle and posterior loculus and consists half region of it. The anterior loculus bears a pair of bifurcated hooks, at its anterior tip and measures 0.165 in length and 0.107 to 0.0209 in breadth. The middle loculus is medium in size, broader than long and measures 0.083 in length and 0.150 to 0.184 in breadth. The posterior loculus is small in size, than the other anterior two loculi; almost triangular in shape and measures 0.043 in length and 0.072 to 0.0146 in breadth. The paired bifurcated hooks measure 0.139 in length and 0.017 to 0.060 in breadth. The outer prong is shorter than the inner prong and measures 0.142 in length an d0.004 to 0.016 in breadth. The inner prong is longer, wide, curved and measures 0.142 in length and 0.009 to 0.027 in breadth. The handle is short, wide and measures 0.059 in length an d0.013 to 0.013 to 0.033 in breadth.

The scolex is followed by a short neck, which is having the same width through out and measures 0.582 in length and 0.243 to 0.277 in breadth.
The mature segments are medium in size, broader than long, almost one and half times broader than long, with almost straight or irregular lateral margins, with short, blunt, round projections at the anterior and the posterior corners of the segments and measure 0.325 in length and 0.485 to 0.495 in breadth. The testes are small in size, follicular, oval in shape, 44 to 45 in number, preovarian, in a single field, anterior to the cirrus pouch, in the anterior half of the segments, in the central medulla, bounded laterally by longitudinal excretory canals and measure 0.010 to 0.019 in length and 0.015 to 0.024 in breadth. The cirrus pouch is large in size, oval in shape, placed just anterior to the middle of the segments, extends medially, almost up to the centre of the same, obliquely placed, directed posteriorly, spindle shaped in appearance, broader in the middle, tapering on both the sides, opens marginally, extends far beyond the longitudinal excretory canals and measures 0.218 in length and 0.015 to 0.087 in breadth. The cirrus is large in size, wide, bulbous, triangular, in its anterior half, narrow and tapering in its posterior half, in a protruded condition, contained within the cirrus pouch and measures 0.267 in length and 0.019 to 0.102 in breadth.
The ductus ejaculatorius is connected to the cirrus posteriorly, which is think, short, straight, oblique and measures 0.097 in length and 0.010 to 0.015 in breadth. The vas deferens is thin, short anteriorly directed and measures 0.097 in length and 0.005 to 0.010 in breadth.

The ovary is medium in size, distinctly bilobed, with unequal lobes, poral lobe slightly larger than the aporal lobe, almost dumb bell shaped in appearance, situated near the posterior margin and in the aporal half of the segments, with irregular margin, having numerous short, blunt, round acini and measures 0.067 in length and 0.072 to 0.218 in breadth. The isthmus is short, wide and measures 0.034 x 0.049 in length and breadth respectively. The vagina is a thin tube, starts from the genital pore, situated posterior to the cirrus pouch, extends obliquely for a short distance i.e. upto the longitudinal excretory canals, takes a turn medially and transversely, extends upto the middle of the segments, turns to the posterior side, runs in the middle of the segments, reaches and opens in to the ootype and measures 0.368 in length and 0.010 to 0.015 in breadth. The ootype is medium in size, oval in shape, antero posteriorly elongated, antero-ventral to the isthmus and measures 0.034 in length and 0.015 to 0.024 in breadth.

The genital pores are medium in size, oval in shape, marginal, irregularly alternate, at the middle from the anterior margin of the segments, or just anterior to the middle of the same and measures 0.049 in length and 0.015 to 0.019 in breadth.
The longitudinal excretory canals are wide and measure 0.015 to 0.024 in breadth.

DISCUSSION

After going through the literature, and considering the number of testes, the present worm, comes closer to Acanthobothrium uncinatum (Rud, 1819) Blainville, 1828 and A. macracanthum Southwell, 1925. It resembles them in few characters, but differs from them, in many characters, which are as follows:

1. The length of the present worm is 8.82 mm, where as the same in A. uncinatum is 3 to 8 cm and in A. macrocanthum is 21 cm.

2. The length and breadth of the scolex of the present worm is 0.168 to 0.388 x 0.572 where as the same in A. uncinatum 0.650 x 0.650 and in A. macrocanthum 1.8 x 1.0.

3. The total length of the neck in the present cestode is 0.582, where as the same in A. uncinatum 3 to 6 and in A. macrocanthum 1.0.

4. The total number of the segments, in the present worm are 47, whereas the same in A. uncinatum 250 and in A. macrocanthum several hundreds.

5. The total length of the hook, in the present cestode is 0.139 , where as the same in A. uncinatum 0.090 to 0.100 and in A. macracanthum 490.
6. The testes in the present form, are 44 to 45 in number, where as the same in *A. uncinatum* 50 to 60 and in *A. macracanthum* 42 to 53.

7. The cirrus pouch, in the present tapeworm is large, oval, placed anterior to the cirrus pouch, extends far beyond the longitudinal excretory canals, where as the same in *A. uncinatum* lie posterior to the vagina and in *A. macracanthum* lie, behind the vagina.

8. In the worm under discussion, the ovary is distinctly bilobed, dumb bell shaped in appearance, situated near the posterior margin of the segments, mostly in the aporal half of the same, where as the same in *A. uncinatum* 2 or 4, lobed U or H shaped and in *A. macracanthum* globular, 'H' shaped in appearance, with many acini.

9. In the present worm, the genital pores are irregularly alternate, in the middle of just anterior to the middle of lateral margin of the segments, where as the same in *A. uncinatum* irregularly alternate, but slightly at the middle of the segments and in *A. macracanthum* irregularly alternate, their position vary, but near the middle of the segments.
Acanthobothrium guptai n.sp.

A) Scolex
B) Mature segment
C) Hooks
Hence it is regarded as a new species and hence the name *Acanthobothrium guptai* n.sp. is proposed, after **Prof. Dr. S.P. Gupta** Ex-Professor and Head, Department of Zoology, Lucknow University, Lucknow; who has contributed so much, in our knowledge of Helminthology.

<table>
<thead>
<tr>
<th>Type species</th>
<th><em>Acanthobothrium guptai</em> n.sp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host</td>
<td><em>Trygon sephen</em></td>
</tr>
<tr>
<td>Habitat</td>
<td>Spiral valve.</td>
</tr>
<tr>
<td>Locality</td>
<td>Bombay, M.S., (West coast of India), India.</td>
</tr>
<tr>
<td>Date of collection</td>
<td>30th March, 1992.</td>
</tr>
</tbody>
</table>

Taetra-phyllidea Carus, 1863.

Onc-obothridae Braun, 1906.

Acanthobothrium VanBeneden, 1849.

**Acanthobothrium ijimai** Yoshida, 1917.

**DESCRIPTION**

Fifteen immature specimens, of the cestode parasites, were collected from the spiral valve of *Rhynchobatus djeddensis* Cantor, 1851, at Karwar, M.S., (West coast of India), India; in the month of March, 1992.

These worms were flattened, preserved in 4% formalin, stained with Harris haematoxylin and whole mount slides were prepared, for further anatomical studies.

The scolex is medium in size, almost globular in shape, distinctly marked off from the strobila, narrow anteriorly, broad posteriorly, bears four bothridia and measures 1.428 in length and 0.893 to 1.393 in breadth. The bothridia are medium in size, oval in shape, elongated, arranged in two pairs, one pair on each lateral side of the scolex. Each bothridium is divided into three loculi, by two transverse septa, with one accessory sucker and
measures 0.714 in length and 0.179 to 0.291 in breadth. The accessory suckers are small in size, oval in shape, transversely elongated, with bifurcated hooks, one in front of each bothridium and measure 0.071 in length and 0.055 to 0.089 in breadth. The anterior loculus is broad and longer than the middle and posterior one and measures 0.339 in length and 0.179 to 0.268 in breadth. The middle loculus is medium in size, broader than long and measures 0.125 in length and 0.179 to 0.268 in breadth. The posterior loculus is small in size and measures 0.071 in length and 0.125 to 0.179 in breadth.

The paired bifurcated hooks measure 0.251 in length and 0.294 in breadth. The outer prong is longer, pointed and measures 0.260 in length and 0.017 to 0.055 in breadth. The inner prong is slightly shorter, curved, with oval tubercle and measures 0.249 in length and 0.012 to 0.038 in breadth. The tubercle is medium in size, oval in shape, antero posteriorly elongated and measures 0.062 in length and 0.017 to 0.043 in breadth. The handle is short, wide, stout and measures 0.109 in length and 0.035 to 0.087 in breadth.

The scolex is followed by a long neck, which is narrow anteriorly, broad posteriorly and measures 0.703 in length and 0.035 to 0.061 in breadth.
The mature segment and gravid segments were not available.

**DISCUSSION**

On closer observations, the worm under discussion, proved to be *Acanthobothrium ijimai* Yoshida, 1917. The present cestode (scolex only) resembles it, in many characters, but differs from it, in few characters, which are known as additional characters, as follows:

1. The present worm differs from *Acanthobothrium ijimai* Yoshida, 1917 in the length and the breadth of the scolex (1.428 X 0.893 - 1.393 Vs. 1.2 X 0.90 to 1.1).

2. The present worm differs from the same, in the length of the neck (0.582 Vs. 0.700 to 1.5).

3. The present cestode, differs from it, in the total length of the hooks '(0.251 Vs. 0.133 tyo 0.170).

As these characters are minor, it is redescribed here, as *Acanthobothrium ijimai* Yoshida, 1917, Yoshida, in 1917 reported his worms from *Dyabatus akajai* at Japan;
Plate No.7

*Acanthobothrium ijimai* Yoshida, 1917

A0  Scolex
B)  Hooks
where as the present worms, are being reported, from *Rhynchobatus djeddensis* at Karwar, M.S., (West coast of India), India.

<table>
<thead>
<tr>
<th>Type species</th>
<th>Acanthobothrium <em>ijimai</em> Yolshida, 1917.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host</td>
<td>Rhynchobatus <em>djedeensis</em></td>
</tr>
<tr>
<td>Habitat</td>
<td>Spiral valve.</td>
</tr>
<tr>
<td>Locality</td>
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</tr>
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<td>Date of collection</td>
<td>13th March, 1992.</td>
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</table>
Tetraphyllidea  Carus, 1863.
Oncobothridae  Braun, 1900.
Pedibothrium  Linton, 1909

**Pedibothrium zugei**  n.sp.

**INTRODUCTION**

The genus **Pedibothrium** is established by Linton, 1909 with type species **P. globicephalum** from **Ginglymostoma cirratum** in Florida and from **Pristis cuspidatus** in India. Linton, 1909 reported **P. brevispina** from **Ginglymostoma cirratum** in Florida, also from **Chiloscyllium indicum**, **rhynchobatus** sp. **Galeocerdo tigrinus** in India, Southwell, 1924 described **P. hutsoni** from **Ginglymostoma concolor** in Ceylon. The present communication, deals with the description of a new species of **P. zugeii**  n.sp. from **Trygon zugei** collected at Ratnagiri, M.S., (West coast of India) India.

**DESCRIPTION**

Nine specimens, of the cestode parasites, were collected from the spiral valve of a marine fish, **Trygon zugei** Muller and Henle, 1906 at Ratnagiri, M.S., (West coast of India) India, in the month of May, 1991.
The worms were flattened, preserved in 4% formalin, stained with Harris haematoxylin and whole mount slides were prepared for further anatomical studies.

The worms were thin, with thin musculature, scolex numerous immature and mature proglottids.

The scolex is large in size, oval in shape, anteroposteriorly elongated, broad at the middle, narrow anteriorly and posteriorly, distinctly marked off from the strobila, with four armed bothridia and measures 0.631 in length and 0.267 to 0.543 in breadth. The bothridia are four in number, large in size, oval in shape, arranged in obliquely placed two pairs and in a cross, occupy the major region of the scolex, each with a pair of bifurcated 'F' shaped, compound hooks are measure 0.218 to 0.262 in length an d0.252 to 0.238 in breadth. The hooks are medium in size, 'F' shaped in appearance, bipronged, unequal in length, with short and broad handle, inner prong shorter and narrow, while the outer one large and wide and measures 0.140 in length and 0.010 to 0.026 in breadth.

The scolex is followed by a short neck, broad anteriorly, narrow posteriorly and measures 0.350 in length and 0.112 to 0.175 in breadth.
The mature segments are large in size, curved, longer than broad, almost 5 to 6 times longer than broad, with convex or concave lateral margins, broad anteriorly, narrow posteriorly, with uneven length and width, without projections at the anterior and the posterior corners of the segments and measure 0.653 in length and 0.104 to 0.026 in breadth. The testes are large in size, oval in shape, 12 in number, preovarian, in a single field, anterior to the cirrus pouch, in the anterior 1/3rd region of the segments, almost in the anterior half of the same, in the central medulla, unevenly distributed, almost in two rows and measure 0.026 to 0.042 in length and 0.024 to 0.029 in breadth. The cirrus pouch is large in size, globular but oval in shape, opens submarginally, slightly obliquely placed, anteriorly directed, almost at 2/3rd from the anterior margin of the segments, extends medially, beyond the middle of the same and measures 0.075 in length and 0.035 to 0.062 in breadth. The cirrus is long, slightly wide, straight, contained with in the cirrus pouch and measures 0.055 in length and 0.003 to 0.005 in breadth. The vas deferens is long, slightly coiled, turned to the anterior side, runs upto the anterolateral side of the cirrus pouch, then turns anteriorly, enlarges and forms the seminal vesicle, then runs anteriorly, in the poral half of segments and measures 0.168 in length and 0.002 to 0.005 in breadth.
The seminal vesicle is large in size, almost oval in shape, antero posteriorly elongated, anterior to the cirrus pouch, placed in the middle of the segments, slightly in the poral half of the same and measures 0.052 in length and 0.026 to 0.050 in breadth.

The ovary is large in size, 'U' shaped in appearance, indistinctly bilobed, with irregular margin, extends laterally, upto the subcortical region of the segments, situated near the posterior margin of the same, lobes extend anteriorly and measures 0.251 in length and 0.102 to 0.024 in breadth. The vagina is a thin tube, long, anterior to the cirrus pouch, starts from the genital pore, takes a curve to the anterior side, extends obliquely, turns, posteriorly, runs medially, extends beyond the middle of the segments, runs posteriorly, in the middle of the segments, reaches and opens in to the ootype and measures 0.234 in length and 0.003 to 0.007 in breadth. The ootype is medium in size, oval in shape, antero posteriorly elongated, preovarian, situated in the concavity of the ovarian lobes, just touching to the anterior margin of the ovary and measures 0.023 in length and 0.007 to 0.016 in breadth.
The genital pores are large in size, oval in shape, antero posteriorly elongated, wider than long, 2-3 times wider than long, open submarginally, irregularly alternate, almost at 2/3 rd from the anterior margin of the segments and measure 0.052 in length an d0.009 to 0.017 in breadth.

The vitellaria are granular, thin strips, placed on each lateral side, in the corticular region and from the anterior to the posterior margin of the segments.

The longitudinal excretory canals are narrow and measure 0.007 in breadth.

**DISCUSSION**

The genus *Pedibothrium* is erected by Linton in 1909 with type species *P. globicephalum* from *Pristis cuspidatus*, India,. Later on the following species are added to this genus:

3. *P. hutsoni* Southwell, 1924.
5. *P. veravalensis* Shinde, Jadhav and Deshmukh, 1980.

Later on no species is added to this genus.
The worm under discussion is having the length of the worm 0.8 cm, breadth of the worm 0.04 cm, the length of the scolex 0.61, breadth of the scolex 0.267 to 0.543, bothridia without accessory suckers, testes 12 in number and ovary 'U' shaped in appearance.

1. The worm under discussion, is having bothridia with accessory suckers, differs from *P. globicephalum*, *P. brevispin*se, *P. hutsoni* and *P. longispine* which are having the bothridia without accessory suckers.

   The present cestodes, differ from *P. lintoni* which is having the length of the worm 15, width of the worm, 0.07 cm, scolex circular, the inner prong 0.03 x 0.09, testes 48 - 52 in number and ovary 'H' shaped.

3. The present worm, differs from *P. veravalensis* which is having the breadth of the worm 0.011, scolex circular, inner prong curved and tubercle present; bothridia elongated, testes 38 - 42, cirrus pouch just above the middle and vitellaria follicular, in a single row, on each side.

   All other differentiating characters, of the the present form, with all other species, are given in the comparative chart at the end.
Pedibothrium zugeii n.sp.

A) Scolex
B) Mature segments
C) Hooks
As the above noted characters are valid enough, to accommodate these worms, in to a new species and hence the name *Pediobothrium zugeii* n.sp. is proposed after the species name of the host.

<table>
<thead>
<tr>
<th>Type species</th>
<th><em>Pediobothrium zugeii</em> n.sp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host</td>
<td><em>Trygon zugei</em></td>
</tr>
<tr>
<td>Habitat</td>
<td>Spiral valve.</td>
</tr>
<tr>
<td>Locality</td>
<td>Ratnagiri, M.S., (West coast of India), India.</td>
</tr>
<tr>
<td>Date of collection</td>
<td>12th May, 1991.</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Length of worm</td>
<td>1.6-5.6</td>
</tr>
<tr>
<td>Breadth of worm</td>
<td>600 u</td>
</tr>
<tr>
<td>Scolex</td>
<td>Globular</td>
</tr>
<tr>
<td>Accessory Suckers</td>
<td>Absent</td>
</tr>
<tr>
<td>Hooks</td>
<td>2, pronged, inner prong of each hook, curved total hook length 35 μ</td>
</tr>
<tr>
<td>Inner prong</td>
<td>36-40 μ</td>
</tr>
<tr>
<td>Outer prong</td>
<td>65-70 μ</td>
</tr>
<tr>
<td>Shape of bothridia</td>
<td>Globular with prominent margin</td>
</tr>
<tr>
<td>Neck</td>
<td>Present</td>
</tr>
<tr>
<td>Number of segment</td>
<td>Numerous</td>
</tr>
</tbody>
</table>

Continued...
<p>| | | | | |</p>
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<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Testes</td>
<td>Numerous (170-180)</td>
<td>70</td>
<td>-</td>
<td>80-130</td>
</tr>
<tr>
<td>Cirrus pouch</td>
<td>Oval, just posterior to the middle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exactly at the middle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cirrus</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ovary</td>
<td>'U' shaped</td>
<td></td>
<td></td>
<td>'U' shaped</td>
</tr>
<tr>
<td>Vagina</td>
<td>Anterior to cirrus pouch.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genital pore</td>
<td>Marginal, irregularly alternate</td>
<td></td>
<td></td>
<td>Marginal, irregularly alternate</td>
</tr>
<tr>
<td></td>
<td>Marginal, irregularly alternate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitellaria</td>
<td>Follicular in 2-3 rows</td>
<td></td>
<td></td>
<td>Follicular in 7-3 rows</td>
</tr>
<tr>
<td>Host</td>
<td>Pristis cuspidatus</td>
<td></td>
<td></td>
<td>Ginglymostona concolor</td>
</tr>
<tr>
<td></td>
<td>Chiloscyllium indicum</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>---------------------------</td>
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<td>----------------</td>
<td>-----------------</td>
<td></td>
</tr>
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<td></td>
<td>Shinde et al., 1980</td>
<td>Shinde, et al., 1980</td>
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<tr>
<td>&amp; 1</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Length of worm</td>
<td>15 mm long</td>
<td>-</td>
<td>.8 mm</td>
<td></td>
</tr>
<tr>
<td>Breadth of worm</td>
<td>0.07</td>
<td>0.11</td>
<td>.04 mm</td>
<td></td>
</tr>
<tr>
<td>Scolex</td>
<td>Circular</td>
<td>Circular</td>
<td>Distinctly marked off from strobila, large, oval.</td>
<td></td>
</tr>
<tr>
<td>Accessory suckers</td>
<td>Present without spine</td>
<td>Present without spines</td>
<td>Absent</td>
<td></td>
</tr>
<tr>
<td>Hooks</td>
<td>Bifurcated inner prong of each hook curved</td>
<td>Bifurcated, inner prong of each hook curved, tuberculate and perforation.</td>
<td>Bipronged, inner prong shorter and narrow.</td>
<td></td>
</tr>
<tr>
<td>Inner prong</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Outer prong</td>
<td>0.03x0.009</td>
<td>0.04x0.01</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Shape of bothridia</td>
<td>0.09x0.01 oval</td>
<td>0.1x0.01 elongated</td>
<td>Oval in shape large in size</td>
<td></td>
</tr>
<tr>
<td>Neck</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>Number of segments</td>
<td>Numerous</td>
<td>Numerous</td>
<td>Numerous</td>
<td></td>
</tr>
<tr>
<td>Testes</td>
<td>48-52</td>
<td>38-42</td>
<td>12 in number.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cont...</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>7</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------</td>
<td>----------------------------------------</td>
<td>----------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Cirrus pouch</td>
<td>Above the middle at 1/3 oblique</td>
<td>Just above the middle</td>
<td>Large, almost at 2/3rd from the</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>anterior margin of segments.</td>
<td></td>
</tr>
<tr>
<td>Cirrus</td>
<td>Straight</td>
<td>Straight</td>
<td>Long, wide</td>
<td></td>
</tr>
<tr>
<td>Ovary</td>
<td>'H' shaped anteroventral</td>
<td>'H' shaped anterior to cirrus pouch</td>
<td>Indistinctly bilobed, 'U' shaped</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>in appearance.</td>
<td></td>
</tr>
<tr>
<td>Vagina</td>
<td>-</td>
<td>-</td>
<td>Anterior to the cirrus pouch.</td>
<td></td>
</tr>
<tr>
<td>Genital pore</td>
<td>Submarginal, unilateral</td>
<td>Marginal, irregularly alternate</td>
<td>Open submarginally, irregularly</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>alternate</td>
<td></td>
</tr>
<tr>
<td>Vitellaria</td>
<td>Granular</td>
<td>Follicular in single row</td>
<td>Granular, thin strips.</td>
<td></td>
</tr>
<tr>
<td>Host</td>
<td>Stegostoma tigrinum</td>
<td>Stegostroma tigrinum</td>
<td>Trygon zugei.</td>
<td></td>
</tr>
</tbody>
</table>
