

**On *Deuterobaris intestinalis* Mehrotra, 1973 and *Octangium takanoi* Kobayashi, 1921 (Trematoda : Microscaphidiidae) from a marine turtle in India**

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**Abstract.** *Deuterobaris intestinalis* Mehrotra, 1973 is described in detail and its validity discussed. A key to the species of the genus is provided. The description of *Octangium takanoi* is also supplemented.

**Keywords.** Trematoda ; microscaphidiidae ; marine turtle ; *Deuterobaris intestinalis* ; *Octangium takanoi*.

During an exploratory survey of digenetic flukes of chelonians, two species of microscaphidiid trematodes were recovered along with other forms from the intestine of two marine turtles, *Chelone mydas* (Linn.), collected from the gulf of Mannar at Pamban (Tamil Nadu, South India). The material comprised four specimens of *Deuterobaris intestinalis* Mehrotra, 1973 and two mature and fifteen immature specimens of *Octangium takanoi* Kobayashi, 1921. *D. intestinalis* is being described here in detail, as only the diagnostic features of this species have earlier appeared in the literature (Mehrotra, 1973). Similarly, *O. takanoi* is being redescribed since its original description (Kobayashi, 1921) was incomplete.

The flattened flukes, after fixation in 70% alcohol or Bouin were stained with Borax carmine or Mayer's carmalum. For sectioning, the whole worms fixed in Bouin were serially cut at a thickness of 5-7  $\mu$  and stained with haematoxylin-eosin.

Family Microscaphidiidae Travassos, 1922\*

Genus *Deuterobaris* Looss, 1900

Syn. *Baris* Looss, 1899 preoccupied

*Deuterobaris intestinalis* Mehrotra, 1973 (figures 1-7)

**Description** (all the measurements are in mm)

Body light pink in live condition, foliate, with rounded extremities, 12.58-13.02 long by 4.57-4.7 wide across anterior testis. Cuticle unarmed. Ventral surface

\* In conformity with the views of Stunkard (1943) and Skrjabin (1949), Microscaphidiidae (and not Angiodictyidae Looss, 1902) has been considered the valid name for the family.

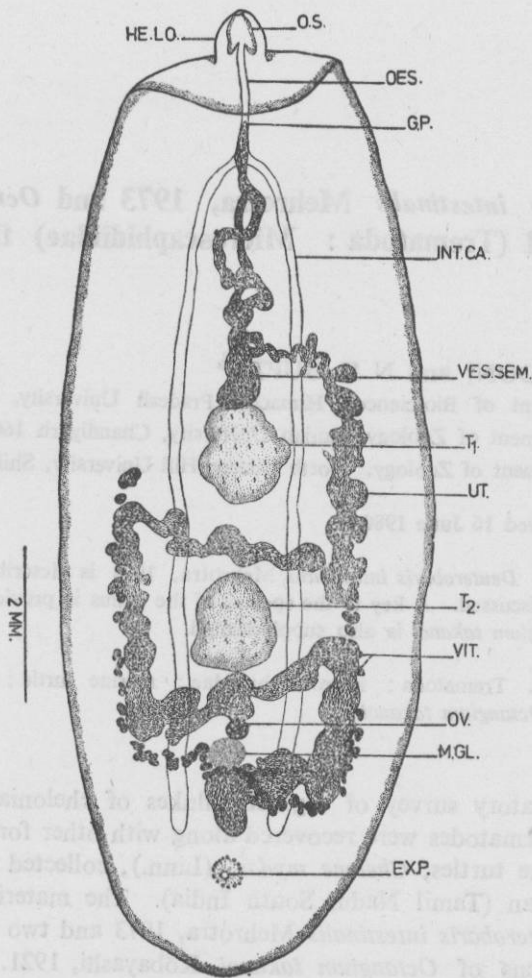


Figure 1. *Deuterobaris intestinalis* Mehrotra, 1973. A whole mount (ventral view). (Explanation of abbreviations in p. 560)

of body marked by the presence of seven longitudinal rows of elevated areas representing ventral glands, elevated areas of inner five rows further divided into two subareas arranged in regular rows, whereas those in outermost rows mostly undivided and also not forming any regular linear arrangement; the gland cells aggregating in these elevated areas are not delimited from the body parenchyma by any muscular layer. Head lobe given off from the dorsal surface of body near its anterior end, tongue-like, 0.61–0.66 in length and 0.61 mm in breadth, bearing oral sucker. The latter elongate, 0.52–0.61 long and 0.35 in maximum width across its base, provided with a pair of small oral diverticula directed backwards. Oesophagus 1.40–1.45 long, its distal end slightly thickened on account of the presence of circular muscle fibres, thus forming a bulb-like thickening. Intestinal caeca simple and slender, about one-third of total breadth of body apart from lateral margins, terminating 1.76–1.84 in front of hind end of body.

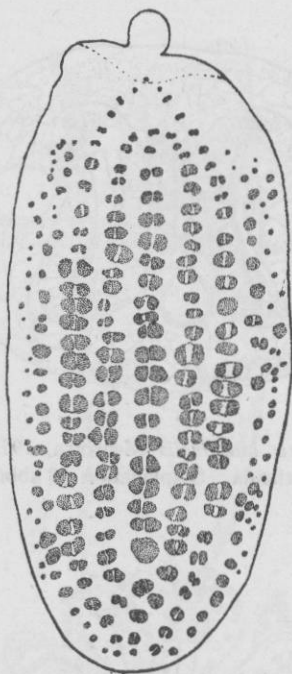


Figure 2. *Deuterobaris intestinalis* Mehrotra, 1973, Ventral glands in an unflattened specimen.

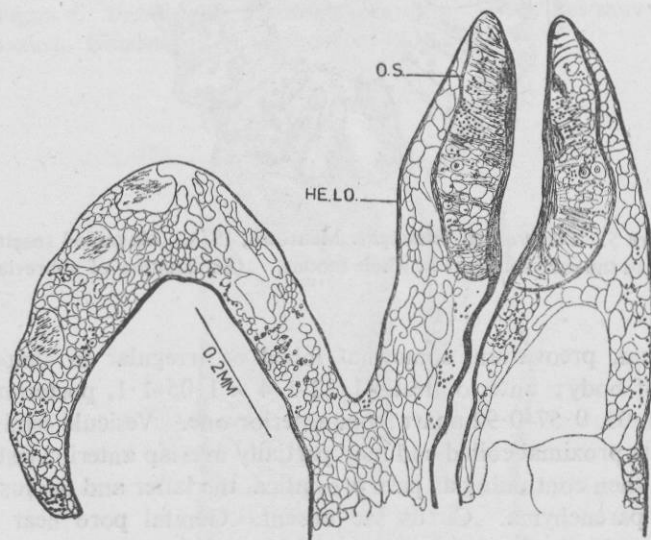


Figure 3. *Deuterobaris intestinalis* Mehrotra, 1973. A portion of sagittal section showing the head lobe and oral sucker. (Explanation of abbreviations in p. 560)

Excretory vesicle small, U-shaped; irregular reticulum of its branches spreading throughout the body; excretory pore dorsal, 0.96-1.44 in front of posterior extremity of body, surrounded by numerous (16-17) diverticula which form a rosette-like structure.

Lymphatic vessels numerous, running anteroposteriorly, branching and rebranching extensively in peripheral and anterior regions of body.

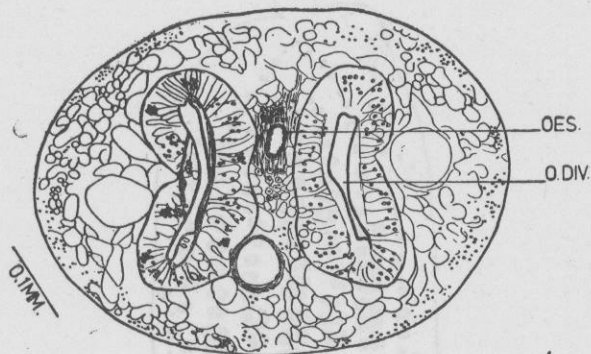


Figure 4. *Deuterobaris intestinalis* Mehrotra, 1973. A transverse section passing through the oral diverticula. (Explanation of abbreviations in p. 560)

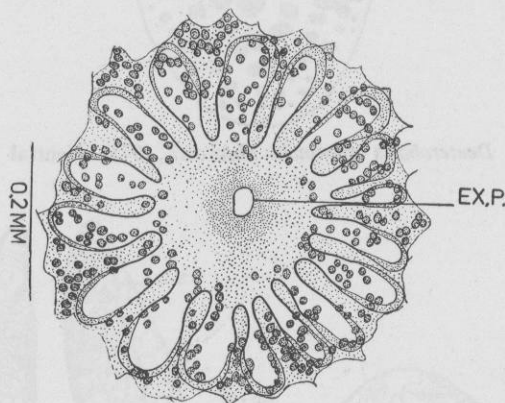


Figure 5. *Deuterobaris intestinalis* Mehrotra, 1973. Magnified rosette-like structure around the excretory pore in whole mount. (Explanation of abbreviation in p. 560)

Testes tandem, preovarian, somewhat lobed or irregular in shape, located in middle third of body; anterior testis  $1.32-1.4 \times 1.05-1.1$ , posterior testis  $1.32-1.45 \times 0.96-1.05$ ,  $0.57-0.92$  apart from anterior one. Vesicula seminalis median, pretesticular, its proximal coiled end may partially overlap anterior testis, narrowing anteriorly and then continuing as pars prostatica, the latter and ductus ejaculatorius lying free in parenchyma. Cirrus sac absent. Genital pore near caecal bifurcation, at about level of posterior third of length of oesophagus.

Ovary median,  $0.30-0.32 \times 0.36$ , far in front of hind end of body and  $0.52-0.66$  behind posterior testis. Mehlis' gland posterior to ovary. Laurer's canal present. Uterus forming a characteristic S-shaped coil, first descending a little up to caecal termination, then inwards behind posterior testis so as to come to lie in extracaecal field on right side, running parallel to the corresponding intestinal caecum, again assuming a transverse course in intertesticular space and then proceeding anteriorly on outer side of and parallel to left intestinal caecum, in pretesticular region acquiring a median course ventral to vesicula seminalis. Metraterm short. Eggs  $0.071-0.082 \times 0.044-0.049$ . Vitellaria arranged in a

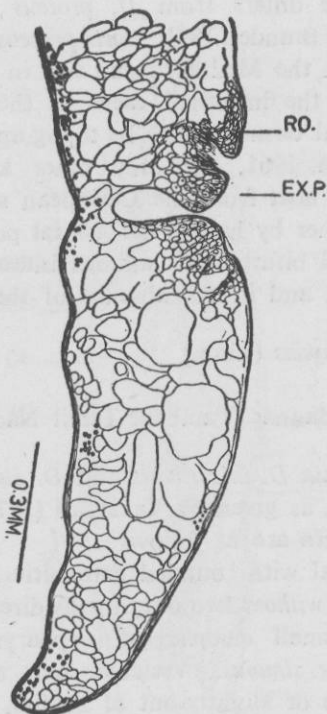


Figure 6. *Deuterobaris intestinalis* Mehrotra, 1973. Excretory pore in sagittal section. (Explanation of abbreviations in p. 560)

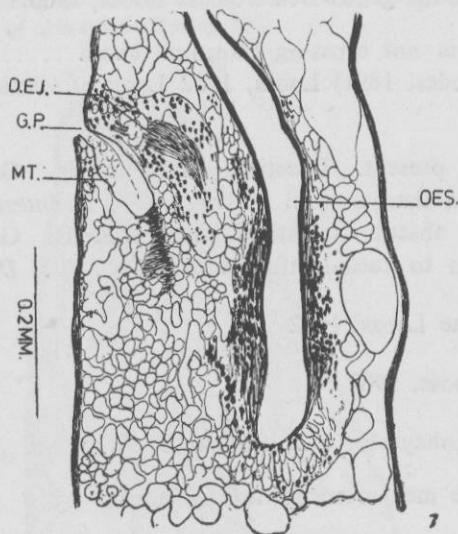


Figure 7. *Deuterobaris intestinalis* Mehrotra, 1973. A portion of a sagittal section passing through the genital pore. (Explanation of abbreviations in p. 560)

U-shaped pattern, right limb of 'U' commencing at about level of middle of anterior testis, and left limb about midway between the two testes; both limbs curving inwards crossing intestinal caeca and meeting medially a little in front of caecal termination, laterally covering uterine coils at some places.

*Remarks* : *D. intestinalis* differs from *D. proteus* (Brandes, 1891) Looss, 1902 [syn. *Monostomum proteus* Brandes, 1891; *Baris proteus* (Brandes, 1891) Looss, 1899] from *Chelone mydas* from the Mediterranean sea, in which the U-shaped look of vitellaria does not cross the intestinal caeca as the two limbs of the 'U' join medially behind the caecal termination. In topography of the vitellaria, it comes close to *D. cheloni* Gupta, 1961, the only other known species of the genus recovered from the same host from the Caribbean sea (Trinidad), but the latter also differs from the former by having the genital pore nearer to the oral sucker rather than to the caecal bifurcation, sinuous intestinal caeca and smaller eggs ( $0.04-0.05 \times 0.03-0.04$ ), and in the absence of the oral diverticula.

Host: *Chelone mydas* (Linn.)  
 Location: Intestine  
 Locality: Gulf of Mannar (Pamban, Tamil Nadu).

In order to accommodate *D. intestinalis* and *D. cheloni*, the diagnostic features of the genus *Deuterobaris*, as given by Yamaguti (1971), have been emended. The emended generic characters are as follows:

Body flattened, elliptical with rounded extremities, spinulate on ventral side or not. Oral sucker with or without two outgrowths directed backwards. Oesophagus moderately long, with small oesophageal (=pharyngeal) swellings posteriorly. Intestinal caeca simple or sinuous. Vesicular part of excretory system V- or U-shaped. Ovary median or slightly out of median line, a little behind posterior testis. Lateral rows of vitelline follicles curving round or a little in front of caecal ends towards median line (forming a U-shaped loop).

Key to the species of the genus *Deuterobaris* Looss, 1900.

1. Loop of vitellaris not crossing intestinal caeca.....  
*D. proteus* (Brandes, 1891) Looss, 1902 Loop of vitellaria crossing intestinal caecae.....2
2. Oral diverticula present. Intestinal caeca simple. Genital pore nearer to caecal bifurcation than to oral sucker.....*D. intestinalis* Mehrotra, 1973.  
 Oral diverticula absent. Intestinal caeca sinuous. Genital pore nearer to oral sucker than to caecal bifurcation..... *D. cheloni* Gupta, 1961.

Subfamily Octangiinae Looss, 1902

Genus *Octangium* Looss, 1902

*Octangium takanoi* Kobayashi, 1921 (figures 8, 9).

*Description* : (all the measurements are in mm)

Body lanceolate, narrowing towards anterior extremity and forming a pair of conical projections at its posterior end, 5.16-7.8 in length and 1.24-1.98 in breadth across testicular region. Cuticle smooth. Oral sucker longer than broad,  $0.29-0.4 \times 0.17-0.34$ , oral diverticula not distinct. Oesophagus 1.42-2.06 long, surrounded by gland cells; oesophageal bulb well developed. Intestinal caeca terminating a little in front of posterior end of body.

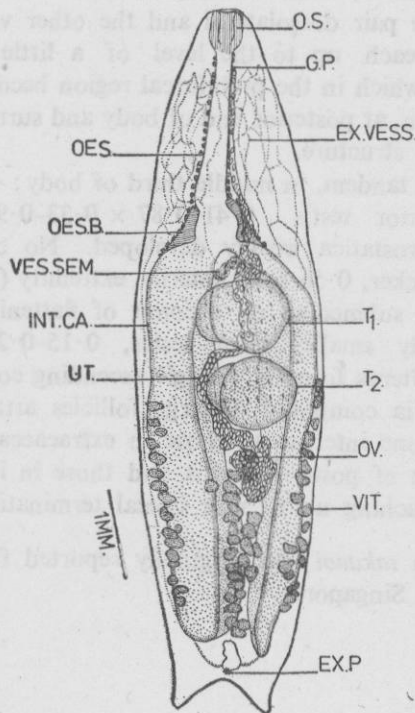


Figure 8. *Octangium takanoi* Kobayashi, 1921. A whole mount (ventral view). (Explanation of abbreviations in p. 560)

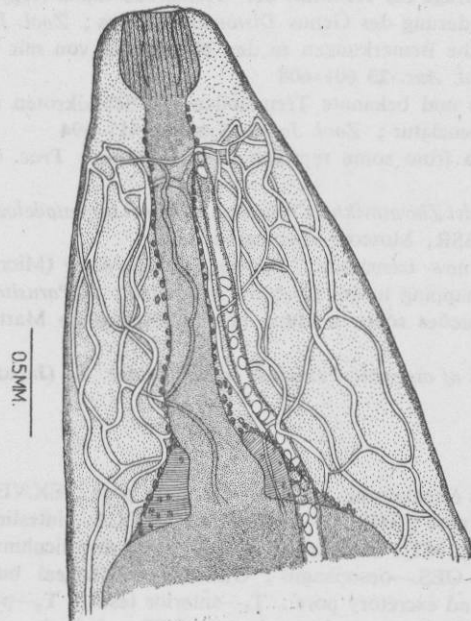


Figure 9. *Octangium takanoi* Kobayashi, 1921. Anterior portion of the same magnified showing anastomosis of the excretory vessels.

Excretory vesicle small; from each side of it are given off two pairs of excretory vessels—one pair dorsolateral and the other ventrolateral to the intestinal caeca—which reach up to the level of a little behind the oral sucker, forming anastomosis which in the prebifurcal region becomes extensive; excretory pore subdorsal, median, at posterior end of body and surrounded by six diverticula forming a rosette-like structure.

Testes large, entire, tandem, in middle third of body; anterior testis 0.40–0.89 × 0.36–0.99, posterior testis 0.41–0.87 × 0.33–0.99. Vesicula seminalis pretesticular. Pars prostatica weakly developed. No cirrus sac. Genital pore a little behind oral sucker, 0.56 from anterior extremity (in one specimen), mostly median, may become submedian on account of flattening of the fluke. Ovary spherical, considerably smaller than testes, 0.15–0.23 × 0.09–0.25. Mehlis' gland postovarian. Uterus forming a single ascending coil. Eggs 0.058–0.078 × 0.044–0.053. Vitellaria composed of large follicles arranged in three groups—two extracaecal and one intercaecal, those in extracaecal groups commencing at level of about middle of posterior testis and those in intercaecal group, behind ovary; posteriorly reaching up to near caecal termination.

*Remarks*: *Octangium takanoi* was originally reported from the same host, i.e., *Chelone mydas*, from Singapore.

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D.EJ.—ductus ejaculatorius; EX.P.—excretory pore; EX.VESS.—excretory vessel; G.P.—genital pore; HE.LO.—head lobe; INT.CA.—intestinal caecum; M.GL.—Mehliss' gland; MT.—metraterm; O.Div.—oral diverticulum; O.S.—oral sucker; OV.—ovary; OES.—oesophagus; OES.B.—oesophageal bulb; RO.—rosette-like structure around excretory pore; T<sub>1</sub>—anterior testis; T<sub>2</sub>—posterior testis; UT.—uterus; VES.SEM.—vesicula seminalis; VIT.—vitellaria.