

**A New Species of *Trichodina* Ehrenberg, 1830 (Ciliophora: Trichodinidae)  
from the Long Whiskered Catfish, *Mystus gulio* (Hamilton-buchanan, 1822)  
(Siluriformes: Bagridae) in Chittagong**

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**Abstract.** Between January 2000 and December 2001, the occurrence of trichodinid ciliates on the freshwater and estuarine fish of Chittagong was studied. During this period a new species of *Trichodina* Ehrenberg, 1830 was found to infect an estuarine fish, the long whiskered catfish, *Mystus gulio* at Sadarghat area in the Karnaphuli River of Chittagong. The described species may be characterized by having denticles with broad, falciform blade leaving moderate space in between them; wide triangular central part with rounded point; slightly posteriorly curved rays of uniform thickness; and a large clear central area containing dark granules or black patches around the centre bounded by heavily notched perimeter. The overall prevalence of this species was 7.8% (14 out of 180) and was most prevalent in post-monsoon period of the year. Based on the silver impregnated adhesive disc the present species reminds *Trichodina liana*. This is the first record of a trichodinid species from *M. gulio* in Bangladesh.

**Key words:** *Trichodina guliae*, *Mystus gulio*, Trichodinidae, Ciliophora, Bangladesh

## INTRODUCTION

Trichodinid infections on fish are common in many zoogeographical regions. Among these, the genus *Trichodina* Ehrenberg, 1830 is the largest of this family. In Bangladesh, very little attention has been paid to the ciliates of this genus. The existing data on this matter can only be found in Asmat *et al*<sup>[1-6]</sup> and Bhuyain *et al*<sup>[7]</sup>. During the present survey on the species diversity of the trichodinid ciliates from some freshwater and estuarine fishes of Chittagong division between January, 2000 and December, 2001, a new species of *Trichodina* infecting the gills of *Mystus gulio* was found and is described here.

## MATERIALS AND METHODS

The host fishes were collected by fishing nets from the Karnaphuli River at Sadarghat area of Chittagong between January 2000 and December 2001. Gill scrapings were made at the riverside. Air-dried gill scrapings were transported to the laboratory. The slides with trichodinid ciliates were impregnated with Klein's silver impregnation technique<sup>[8]</sup>. Examinations of prepared slides were made under research microscope at 10 x 100 magnification. Measurements were done following the recommendations of Lom<sup>[9]</sup>, Wellborn<sup>[10]</sup>, Arthur and Lom<sup>[11]</sup> and Van As and Basson<sup>[12-13]</sup>. Measurements are given in  $\mu\text{m}$ . For comprehensive morphological details of

the ciliates photomicrographs were made. The level of infection was presented as low (1-5 ciliate slide<sup>-1</sup>), medium (6-10 ciliate slide<sup>-1</sup>) and high (more than 10 ciliates slide<sup>-1</sup>).

## RESULTS AND DISCUSSIONS

***Trichodina guliae* sp. n. (Figs. 1-2):**

**Host.** *Mystus gulio*<sup>[14]</sup>. **Locality.** Karnaphuli River at Sadarghat in Chittagong. **Location.** Gills. **prevalence.** <sup>14</sup>/<sub>180</sub> (7.8%). **Infection.** Low.

**Description (n=40):**

**Body:** Medium-sized trichodinid, saucer-shaped, diameter 44.9-58.2 (52.5  $\pm$  3.7).

**Border membrane:** 2.0-5.1 (4.0  $\pm$  1.0) wide, finely striated.

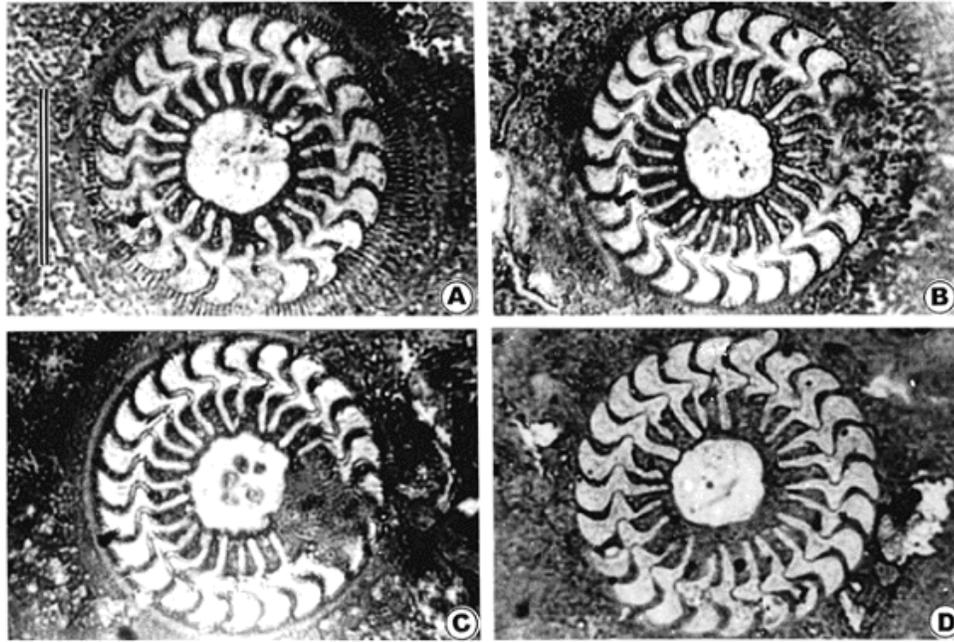
**Adhesive disc:** Concave, 20.2-40.4 (29.0  $\pm$  6.1) in diameter.

**Centre of adhesive disc:** Central area of adhesive disc granular, almost occupied by a large clear area containing few to many dark granules or blackish patches, mainly around the centre, and surrounded by heavily notched, but dark stained perimeter, 5.1-12.1 (8.5  $\pm$  2.4) in diameter.

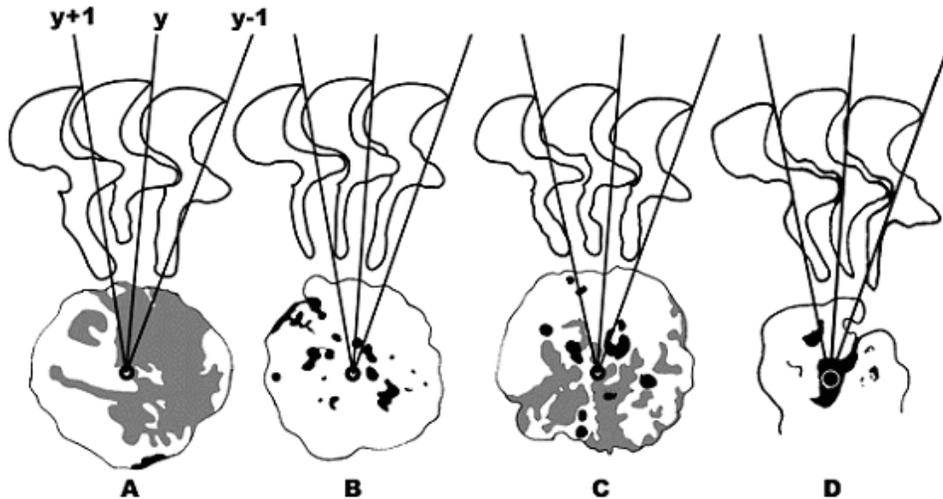
**Denticulate ring:** 12.1-27.3 (20.0  $\pm$  4.4) in diameter.

**Number of denticles:** 21-26 (22.6  $\pm$  1.2).

**Number of radial pins per denticle:** 7-9 (7.9  $\pm$  0.6).



**Fig. 1:** A-D. Photomicrographs of silver impregnated adhesive discs of *Trichodina guliae* sp. n. from *Mystus gulio* in Bangladesh. Scale bar 30  $\mu$ m.



**Fig. 2:** Diagrammatic drawings of denticles of trichodinids: A-C of *Trichodina guliae* from *Mystus gulio* in Bangladesh; and D of *Trichodina liana* Xu, Song and Warren<sup>[15]</sup> (redrawn from Xu *et al*<sup>[15]</sup>).

*Dimensions of denticle:* span, 4.5-12.1 ( $8.4 \pm 2.4$ ); length, 4.4-6.1 ( $5.0 \pm 0.6$ ).

*Dimensions of denticle components:* Length of ray 3.4-6.1 ( $5.2 \pm 0.8$ ), of blade 3.5-4.0 ( $4.0 \pm 0.2$ ); width of central part 2.9-3.2 ( $3.0 \pm 0.1$ ).

*Adoral ciliary spiral:* about 390-400°.

**Denticle Morphology.** Blade of denticle broad and falcate, filling entire space between  $y+1$  axis (Fig. 2B-C) or extends beyond this line (Fig. 2A). Distal margin slightly curved or flat, lying little away from border membrane (Fig. 1A-D). Anterior margin smoothly curves

and forms rounded apex at mid-length of margin. Apical depression, although developed, never impregnates. Anterior blade apophysis rarely visible. Tangent point sharp and slightly lower than distal margin. posterior

margin curves to form deep crescent with deepest point at same level as apex. posterior blade apophysis absent. interblade space moderate, sometimes very narrow, and blade connection thin.

Central part of blade robust, triangular with bluntly rounded point, rarely extends halfway past  $y-1$  axis

(Fig. 2A-C) and interlocked firmly in preceding denticle. section above and below x-axis similar. indentation in lower central part not visible.

Ray connection thin. ray slender, slightly curved in posterior direction or straight often with distinct central groove and parallel to y-axis. ray apophysis directed upward towards central part and in most cases prominent. ray slightly broadened (Fig. 1A) or almost of equal thickness throughout, tapering only slightly towards a rounded (Fig. 1B-C) or truncated point (Fig. 1D). Tip of ray sometimes invades perimeter of central clear area.

The described species may be characterized by having denticles with broad, falciform blade leaving narrow space in between them; wide triangular central part with rounded point; slightly posteriorly curved rays of uniform thickness; and a large clear central area containing dark granules or black patches around the centre bounded by heavily notched perimeter. Based on the silver impregnated adhesive disc the present species reminds *Trichodina liana* Xu, Song and Warren<sup>[15]</sup>.

*T. liana* was described by Xu et al<sup>[15]</sup> from the gills of a marine mollusk *Solen (Plectosolen) gracilis* in the culture beds off the coast of Quingdao, China (Fig. 2D). The presently described species was obtained from the gills of an estuarine fish *Mystus gulio* near the Sadarghat area in the Karnaphuli River, Chittagong and can be distinguished from *T. liana* on the following basis.

In *T. liana*, the shape of blade is broad and squat (*vs* broad and falciform); the inter-blade space is narrow (*vs* moderate); the posterior blade margin forms a shallow and somewhat angular curve (*vs* forms a deep crescent); the blade apophyses present (*vs* not visible); the central part extends nearly to the y-1 axis (*vs* rarely extends halfway past the y-1 axis); the shape of ray is thick (*vs* mostly slender or slightly broadened); the ray connection is thick (*vs* thin); the ray apophysis is not visible (*vs* visible); the inter-ray space is narrow (*vs* very large); the tip of ray is rounded (*vs* truncated or rounded); the central clear area in young present as one to several clear granules (*vs* a round circle); the central clear area in adult represent as a round clear circle (*vs* as an undivided or divided, large circle); and the adoral ciliary spiral is about 380° (*vs* 390-400°).

**Type Host.** *Mystus gulio*<sup>[14]</sup> (Siluriformes: Bagridae)

**Type Locality.** Karnaphuli river (22°18'N 91°53'E) at Sadarghat area in Chittagong, Bangladesh

**Type location.** Gills.

**Type Materials.** Holotype, Slide MG 1 (15/5/2001), paratypes, MG 2 (15/5/2001) and MG 3 (5/7/2001) are in the collection of the Department of Zoology, University of Chittagong, Chittagong 4331, Bangladesh.

**Etymology.** Named after the local name of the host fish as Gulia fish.

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