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OBSERVATIONS ON COLONIAL PERITRICHS (CILIATA; PROTOZA) OF THE OKOBOJI REGION

EVERETT L. BISHOP, JR. AND THEODORE L. JAHN

The family Epistylidae includes those peritrichous ciliates with non-contractile stalks, either solitary or forming large colonies with dichotomous stalks; the individuals are cylindrical, inverted bell-shape, or ovoid. The organisms are attached to aquatic animals, and occasionally to plants. The most recent and complete key to this family is that of Kahl (1935).

The majority of species described in this paper are found attached to the carapace and plastron of *Chrysemys marginata bellii* (Western Painted Turtle). These species may be found also on the Snapping Turtle, or, rarely, attached to some of the filamentous algae on these animals. Other hosts for members of this group at Okoboji are *Chironomus* larvae and *Cyclops*.

The species found in this survey are members of two genera: *Epistylus* and *Opercularia*. They are distinguishable from each other by the presence of a collar around the peristome in the genus *Epistylus* and its absence in *Opercularia*.

DESCRIPTION OF SPECIES

Epistylus niagarae Kellicott (fig. 2).

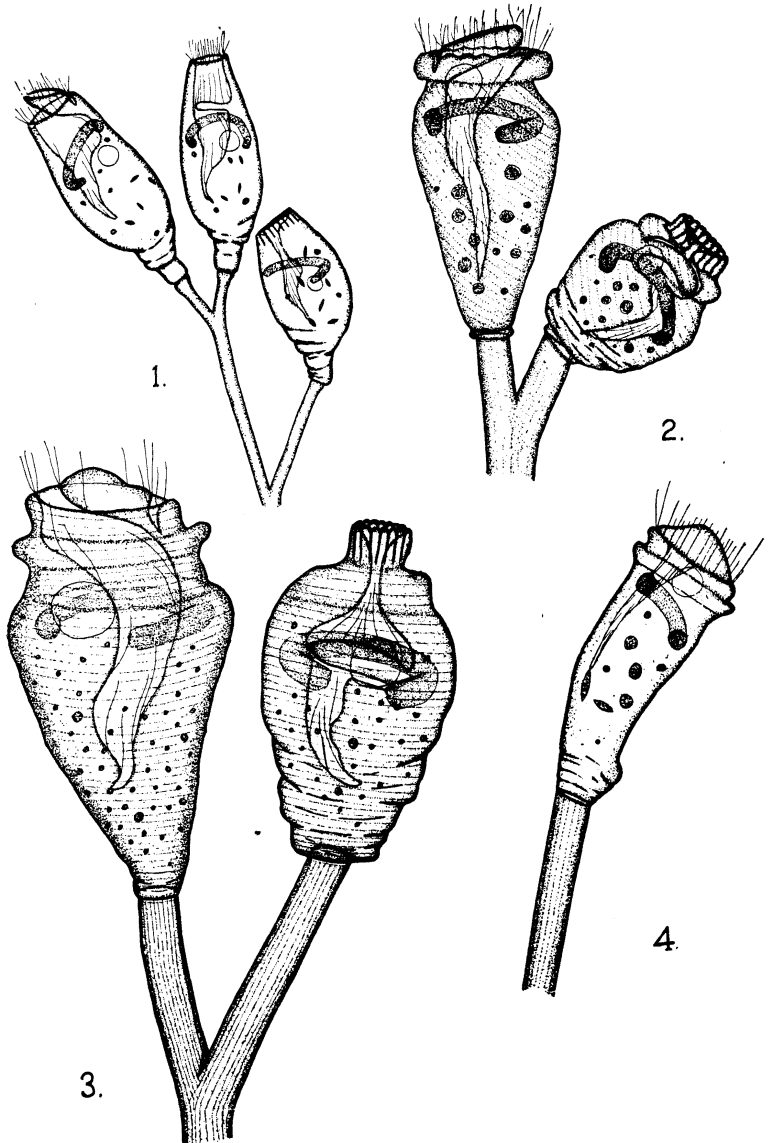
This species is very common both on the Painted and Snapping Turtles. It forms rather large colonies (40-50 individuals), with all branches of the stalk longer than body length except the terminal branches. The stalk is faintly striated longitudinally.

The individual organism is urn-shaped when expanded, with a prominent peristomal ring, whose edge is wavy or crenulated. The peristomal cap is flattened, and forms a slight angle with the top of the peristomal ring.

The nucleus is band-formed, and lies in a transverse position around the gullet, in the anterior third of the body, with the ends directed posteriorly.

The contractile vacuole lies in the anterior fourth of the body, opening into the gullet (rate ca. 2/min.).

The gullet spirals clockwise as seen from the anterior end. It is a tapering tube extending almost to the posterior end of the animal, and contains many slow-beating ciliary structures. The food vacuoles are spherical, large, and not numerous.



DESCRIPTIONS OF FIGURES

The drawings were made from the living organisms with a camera lucida, giving a magnification of 230 diameters.

Fig. 1. *Opercularia ramosa*, showing, from left to right, the fully expanded form, the semi-expanded form, and the contracted form.

Fig. 2. *Epistylus niagarae*, showing the expanded and contracted forms.

Fig. 3. *Epistylus chrysemydis*, sp. nov., expanded and contracted forms. Note the peristomal collar projecting above the peristomal ring.

Fig. 4. *Epistylus urceolata*, expanded form.

Upon stimulation, contraction of the organism occurs by a withdrawal of the peristomal cap and a puckering of the peristomal ring. The organism also bends at the point of attachment of the stalk, and the posterior end folds up, reducing the length about one-half.

Epistylus urceolata Stiller (fig. 4).

This form is common on larvae of *Chironomus plumosus*, dredged from the lake bottom in depths up to nine meters.

The stalk is long and longitudinally striated. Branchings are few, and are longer than body length.

The organism is elongate, cylindrical, with a double peristomal ring. The peristomal cap is hemispherical, prominent, and fills the opening above the gullet.

The gullet is straight, and extends about half-way down the length of the body. The food vacuoles are spindle-shaped when formed, but round up soon after becoming detached from the gullet.

The nucleus is open ring-shaped, and lies transversely in the anterior fourth of the body, just below the peristomal ring. The contractile vacuole lies anterior to the nucleus, in the region of the peristomal ring.

Contraction of this organism is by involution and a puckering of the peristome.

Epistylus chrysemydis, sp. nov. (fig. 3).

This form is common on the Painted Turtle, but has not yet been found on the Snapping Turtle. The stalk is longitudinally striated, with all branchings greater than body-length except the terminal ones, which are one-half to three-fourths body length.

The organisms are large (230-250 μ . long), and are urn-shaped, with a peristomal ring and collar. The peristomal cap is convex, and fills less than one-half of the oral opening.

The gullet is long, reaching to the posterior fourth of the body, and is lined with long ciliary structures. The food vacuoles are small, spherical, and numerous.

The nucleus is band-shaped, slender, and lies transversely just anterior to the middle of the organism.

The contractile vacuole lies in the same region as the nucleus, and is connected to the gullet by a permanent canal. The rate of contraction is about 4 per minute.

The organism when disturbed contracts by a withdrawal of the peristomal cap, a puckering of the peristomal ring, and a pleating or folding of the posterior end.

In general structure this species resembles *E. galea* Ehrenb. Differences are noted, however, which are of such a degree that the establishment of another species seems valid. These differences are: no nodes of the stalk in *E. chrysemydis*, while such nodes are characteristic of *E. galea*; long gullet in *E. chrysemydis*, short gullet in *E. galea*; nucleus long, slender, and transverse in *E. chrysemydis*, long, thick, and longitudinal in *E. galea*.

In Kahl's key to the genus *Epistylus* (Kahl, 1935) this organism can be traced to section 56, page 691. This section contains the species *E. galea*, from which the present species can be distinguished on the basis of the characters noted above.

Opercularia ramosa Stokes (fig. 1).

This form is usually seen in a semi-expanded condition; the fully expanded organism is seen but rarely. It is a very common form on both the Painted and Snapping Turtles, attached directly, or to the stalk of other species, or to filamentous algae on the turtles.

The stalk is smooth, with branches varying in length from twice body length to one-fourth body length.

The body of the individual organism is smooth and very clear (hyaline). A faint diagonal striation is seen under good conditions of observation.

The nucleus is band-shaped, and lies transversely in the anterior half of the body. The contractile vacuole is just posterior to the nucleus, and opens into the gullet.

The gullet is long and spiralled, and contains a few large, slowly-beating ciliary structures. The food vacuoles are distinctive in that they are spindle-shaped when formed, but later become round, apparently as digestive processes occur.

The contraction of the animal occurs by an involution of the peristomal cap, and a slight puckering of the peristome, accompanied by a bending of the posterior part of the body.

The peristomal cap is large, and protrudes well out of the peristome when the organism is fully expanded. As usually observed, the peristomal cap is retraced within the gullet.

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