Dinophilus Gardineri (sp. nov.)
Author(s): Anne Moore
Source: *Biological Bulletin*, Vol. 1, No. 1 (Oct., 1899), pp. 15-18
Published by: The University of Chicago Press in association with the Marine Biological Laboratory
Stable URL: https://www.jstor.org/stable/1535836
Accessed: 23-03-2022 19:41 UTC

BIOLOGICAL BULLETIN

EDITED BY

THE DIRECTOR

AND MEMBERS OF THE STAFF

OF

The Marine Biological Laboratory

WOODS HOLL, MASS.

VOLUME I

BOSTON, U.S.A.
GINN & COMPANY, PUBLISHERS
The Athenæum Press
1900

CONTENTS OF VOL. I

No. 1. — October, 1899.

No. 2. — January, 1900.

No. 3. — May, 1900.

No. 4. — July, 1900.

No. 5. — August, 1900.

No. 6. — September, 1900.

DINOPHILUS GARDINERI (*Sp. Nov.*).

ANNE MOORE.

Preliminary Note.

A new species of *Dinophilus* was found in the summer of 1897, by Dr. E. G. Gardiner, at Woods Holl. The pool in which it is found is an artificial one, 12 by 14 feet, dug about eight years ago to obtain the peat in the marsh. Sea water does not flow into it, but when the tide is unusually high it percolates in through the sand. The salinity of the water is therefore subject to great variation, for a run of low tides results in condensation through evaporation, while heavy rains dilute it. In May, 1898 and 1899, *Dinophilus* was found by Dr. Gardiner in abundance upon green algae floating on the surface of the water. In June, 1898, he kindly brought the animal to my notice and I began work upon it. At that time it was not abundant, and by July 16 had entirely disappeared. In 1899 only two specimens were seen after June 28. Both years the disappearance was coincident with a rainstorm, so that it is quite possible that the influx of fresh water may account for it. Other observers (Hallez,[1] Weldon,[2] Harmer [3]) have noted the periodical disappearance of *Dinophilus*. Weldon attributes it to the disintegration of the female, consequent upon the setting free of the ova, but Schimkewitsch [4] maintains that eggs may be laid several times during the year, and that the female lives for some time after depositing them. He found special ducts present for carrying the eggs to the exterior, so that there

[1] Hallez, P., *Contributions à l'Histoire Naturelle des Turbellaires.* Lille, 1879, p. 155. (D. metameroides.)

[2] Weldon, W. F. R., "On Dinophilus gigas," *Quart. Journ. Micr. Sci.* Vol. xxvii. 1887.

[3] Harmer, S. F., "Notes on the Anatomy of Dinophilus," p. 109, *Journ. Mar. Biol. Ass. of United Kingdoms.* New Series. Vol. ii, October, 1899.

[4] Schimkewitsch, W., "Zur Kenntnis des Baues und der Entwicklung des Dinophilus vom Wei Ben Meere," *Zeit. für wiss. Zool.* Bd. lix. 1895.

is no necessity for disintegration to set them free. Of the disappearance of the animal, and a possible explanation of it, I will speak later.

This species of *Dinophilus*, which I take pleasure in calling *D. Gardineri*, differs in certain features from those species which have been noted by other observers. It is easily recognized without a lens, for its bright orange-red pigment makes a sharp contrast with the green algae upon which it is found. The average length of the form is about 1 mm., but under a dissecting lens the highly colored intestine, with its characteristic stomach portion, and the red kidney-shaped eyes, are noticeable features. The body is about three times as long as it is broad, the proportions varying, of course, with extension or contraction; it is somewhat flattened dorso-ventrally, and when fully extended tapers toward the posterior end. It consists of six definite segments, exclusive of head and tail, distinctly visible in young individuals in a state of extension (Fig. 2). Neither young nor old individuals show segmentation when contracted, and old ones show it only when making a turn, not when moving rapidly in full extension. The head is rounded in front and bears the eyes on its dorsal surface (Fig. 1). The mouth is situated on the ventral surface posterior to the eyes at, or just anterior to, the union of the head with the first body segment. The small unsegmented tail approximates the length of a body segment. It is considerably narrower than the body and tapers to a point. The anus is situated dorsally to its base. Owing to the scarcity of material, I did not ascertain to my satisfaction the arrangement of the cilia, but as nearly as I could determine the animal is com-

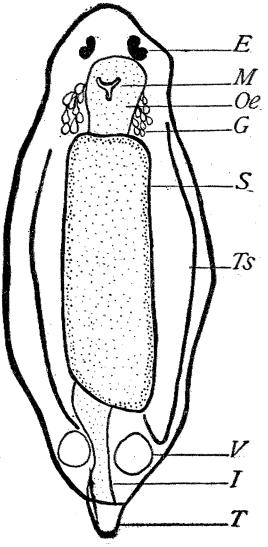

FIG. 1.

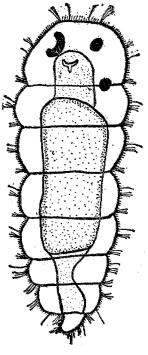

FIG. 2.

pletely ciliated, and, in addition, each segment shows laterally two tufts of long cilia and a strong bristle anteriorly placed. These probably indicate the presence of two rings of cilia on each segment. The head bears two tufts of long cilia in front, and the tail bears several bristles. These are probably of a sensory nature.

No sexual dimorphism is present; it is impossible to distinguish the sex of young individuals. In mature females the paired ovaries are strongly colored and may be clearly seen.

This species differs from *D. gyrociliatus* (*apatris*) and *D. metameroides* in its lack of sexual dimorphism; in the number of segments and in the arrangement of cilia it differs from *D. gigas* (7 segments), *D. taeniatus* (5 segments), *D. pygmaeus* (5 segments), and *D. simplex* (4 segments); in the arrangement of cilia and in the possession of an unsegmented tail it differs from *D. vorticoides* (*caudatus*).

The bilobed or crescentic shape of the eyes of *Dinophilus* often looks as if they were on the way to becoming double, as is the case with some *Turbellaria*. I have found two specimens in which the right eye was made up of two spheres completely separated from each other. In one case they lay close together; in the other, one sphere was in the normal position, the other in the next segment (Fig. 2).

In explanation of the disappearance of *Dinophilus*, alluded to above, I have to offer an observation of a stage in its life history which to my knowledge has not been noted before. On June 27, 1899, in my search for specimens I came across capsules imbedded in the tangle of algae. Through the thin transparent walls I could distinctly see the characteristic form, color, and eyes of *Dinophilus*. In addition to the capsules, eight specimens were found on the same day. These were put by themselves in a shallow glass dish containing salt water and some algae, and were watered from day to day. At the end of a week only five specimens were seen; on searching for the other three, three capsules were found. I then realized that these capsules really represented an encysted stage of *Dinophilus*. The five remaining specimens were transferred to a fresh dish of clear water. Four of them disintegrated;

the fifth formed a cyst. Every stage of the process was watched. The animal became perfectly quiet, and a clear secretion was given off. After a time, probably from a sense of discomfort, it moved away from this secretion, leaving behind it an impression of its form. These impressions had been seen before, but it was not known to what they were due. After moving, the animal continued to give off the secretion, and at the end of the next day the capsule was completed, the whole process taking three days. The other individuals began to secrete in the same way, but in one case the animal was disturbed and the process stopped, and in the others they were attacked by protozoa, causing disintegration. The largest cyst that was found measured .5 mm., the smallest .13 mm. This decrease in size might easily account for their being overlooked, but in addition to this it was found that after keeping the cyst for a time the color faded out so that it became practically unrecognizable.

It is quite probable that this cyst is formed through the activity of numerous gland cells in the skin. Many observers have noted these glands, but no one has suggested an adequate function for them.

The affinities of *Dinophilus* and its systematic position make it a peculiarly interesting form, and I hope in a more favorable year to obtain sufficient material to complete my work upon it.

THE MARINE BIOLOGICAL LABORATORY,
WOODS HOLL, AUG. 6, 1899.