

# A NEW PROTOZOAN FROM THE LARVA OF THE BEETLE OSMODERMA SCABRA

By CLARKE COURSON ZELIFF

Washingtonville, Pa.

Smears from the hind intestine of the larva of *Osmoderma scabra*, a large black beetle that inhabits decaying sawdust and wood, contain abundant *Nyctotherus* Leidy. An investigation of the literature reveals that more than 25 species of this ciliate genus have been described from about the same number of hosts. Description of the new species is given below.

The drawings herein were made with the camera lucida at  $\times 1,600$  and  $\times 700$ .

## NYCTOTHERUS OSMODERMAE, new species

*Specific diagnosis.*—Body of organism typically egg shaped. Size  $50\mu$  to  $87\mu$  long and  $44\mu$  to  $68\mu$  wide. A large group are  $66\mu$  to  $70\mu$  long and  $50\mu$  to  $60\mu$  wide. Nuclei oblong or convex and  $24.6\mu$  long and  $11.2\mu$  or  $8\mu$  wide. The cytopharynx ends at  $20.8\mu$  from the posterior end and in the average-size specimen about  $32\mu$  and  $16\mu$ , respectively, from the oral and aboral sides or surfaces. Cytopharynx  $48\mu$  long. Cilia  $8\mu$  long and the rows  $3.2\mu$  from each other. Micronucleus (pl. 1, fig. 2) anterior to the macronucleus and frequently slightly imbedded in it; the shape is oblong and the size  $3.2\mu$  long by  $2.4\mu$  wide. The chromatin is distributed in small nearly spherical masses. A caryophore, or suspensor of the nucleus, is visible in many specimens. Cytoplasm in the anterior end differentiated from that posterior to the nucleus by lack of vacuoles. A distinct cytopynge (pl. 1, fig. 2) is located at the extreme posterior end.

*Dividing forms.*—Stages of division of *Nyctotherus* have been observed in detail by Zulueta (1916) in *N. ovalis*. The forms examined by me (pl. 2) are much like those described and pictured by him, with the exception of (pl. 2, fig. 2) an individual with two new cytopharynges formed previous to the division of the nucleus. As stated by Zulueta, the organelles disappear before division, to be formed anew in the daughter cells (pl. 2, fig. 1). It is not possible to follow the activities of the micronucleus in the material available, but it has been clearly seen in one organism (pl. 2, fig. 5) in the late phase of

cell division and also in two organisms with the macronuclei much elongated, as in the stage shown in plate 2, figure 2. In the latter the micronucleus was longer than usual, but no delicate spindle was detected. The chromatin is in spherical granules. One dividing organism similar to that shown in plate 2, figure 3, is almost separated into daughter cells, and yet the isthmus connecting the daughter macronuclei still remains.

*Type specimen.*—U.S.N.M. no. 8586.

*Host.*—*Osmoderma scabra*.

*Location.*—Posterior intestine.

*Distribution.*—Pennsylvania.

*Remarks.*—The distinctive features about the species are the size and shape of the nuclei and other organelles. The absence of the caryophore in some specimens may be due to the preparation, or it may suggest that it is an artifact. Grassé (1926) divides the genus *Nyctotherus* into two groups, depending upon the presence or absence of the caryophore. For those lacking this organelle he suggests the new genus name *Nyctotherides*.

TABLE 1.—Recorded species of *Nyctotherus*

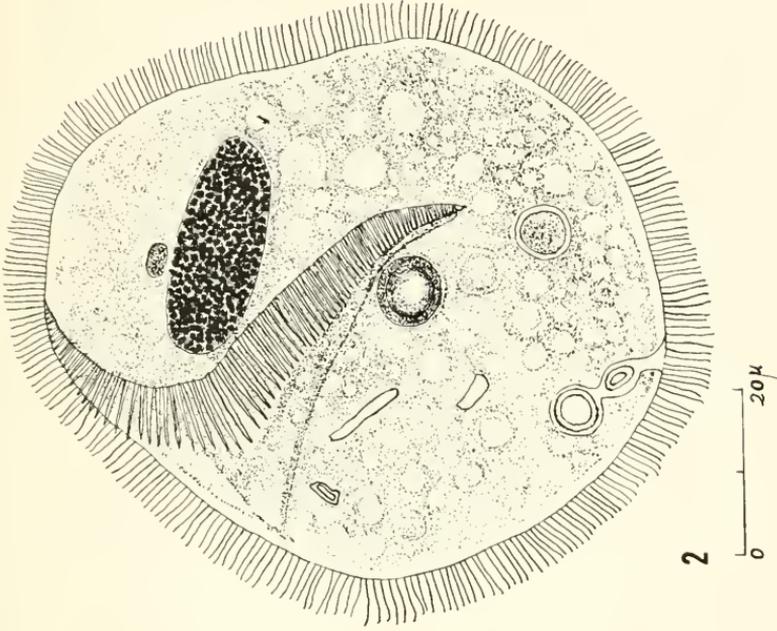
SPECIES	HOST	LOCATION
<i>africanus</i> Castellani	<i>Homo sapiens</i>	Intestine (C).
<i>amaniensis</i> Bezenberger	<i>Bufo</i> sp.	Intestine.
<i>buissoni</i> Pinto	Cockroach	Intestine (C).
<i>comatulæ</i> Claparède and Lachmann.	<i>Comatula mediterranea</i>	Intestine and coelomic fluid.
<i>cordiformis</i> Ehrenberg	<i>Rana temporaria</i> , <i>R. esculenta</i> , <i>Bombinator igneus</i> , <i>Bufo cinereus</i> , <i>B. melanostictus</i> .	Intestine and cloaca (C).
<i>cunhai</i> Pinto	<i>Ilyta crosopedospila</i>	Intestine.
<i>duboisii</i> Künstler	<i>Cetonia aurata</i> (larvae), <i>Oryctes maricornis</i>	Intestine (C).
<i>faba</i> Schaudinn	<i>Homo sapiens</i>	Intestine.
<i>giganteus</i> Krause	do.	Do.
<i>gybryonus</i> Claparède and Lachmann.	<i>Hydrophilus piceus</i>	Do.
<i>haematobius</i> Claparède and Lachmann.	<i>Apus canceriformis</i> , <i>Lepidurus productus</i>	Branchial sacs.
<i>haranti</i> Grassé	<i>Tarentola mauritanica</i>	Intestine (C).
<i>kempi</i> Ghosh	<i>Ampullaria globosa</i>	Rectum.
<i>macropharyngeus</i> Bezenberger	<i>Rana tigrina</i> , <i>R. cyanophlyctis</i> , <i>R. hexadactyla</i>	Cloaca.
<i>magnus</i> Bezenberger	<i>Rana hexadactyla</i>	Do.
<i>multisporiferus</i> Walker	<i>Cavia cobaya</i>	Intestine.
<i>osmodermæ</i> Zeiff	<i>Osmoderma scabra</i>	IIind intestine.
<i>ovalis</i> Leidy	<i>Blatta orientalis</i> , <i>B. germanica</i> , <i>Gryllotalpa vulgaris</i> , <i>Periplaneta americana</i> .	Intestine (C).
<i>papillatus</i> Dobell	<i>Bufo melanostictus</i> , <i>Rana tigrina</i> , <i>Rhacophorus maculatus</i> .	Rectum.
<i>parvus</i> Walker	<i>Rana clamata</i> , <i>R. palustris</i>	Do.
<i>pisicicola</i> Dobell	<i>Rana tigrina</i> , <i>Piagetus brachypomus</i>	Intestine (C).
<i>reniformis</i> Bhatia and Gulati	<i>Bufo macrotis</i>	Rectum.
<i>termitis</i> Dobell	<i>Calotermes milaris</i>	Intestine (C).
<i>tejerai</i> Pinto	<i>Bufo marinus</i>	Intestine.
<i>tipulæ</i> Grassé	<i>Ctenophora elegans</i>	Do.
<i>travassosi</i> Cunha and Pinto	<i>Otososcolex wiengreeni</i>	Do.
<i>reioz</i> Leidy	<i>Julus marginatus</i>	Intestine (C).
<i>viannai</i> Pinto	Batrachian	Intestine.
sp. D'Udekem	<i>Julus terrestris</i>	Do.

Table 1 lists the species of *Nyctotherus* that have been recorded, but the complete data on each are difficult to obtain. The letter C indicates the presence of a caryophore. Bhatia and Gulati (1927) give a list of species and a key for identification. The list is included here with some additions, but the key is not repeated. *N. osmodermae* is closely related to *N. duboisii* (Künstler).

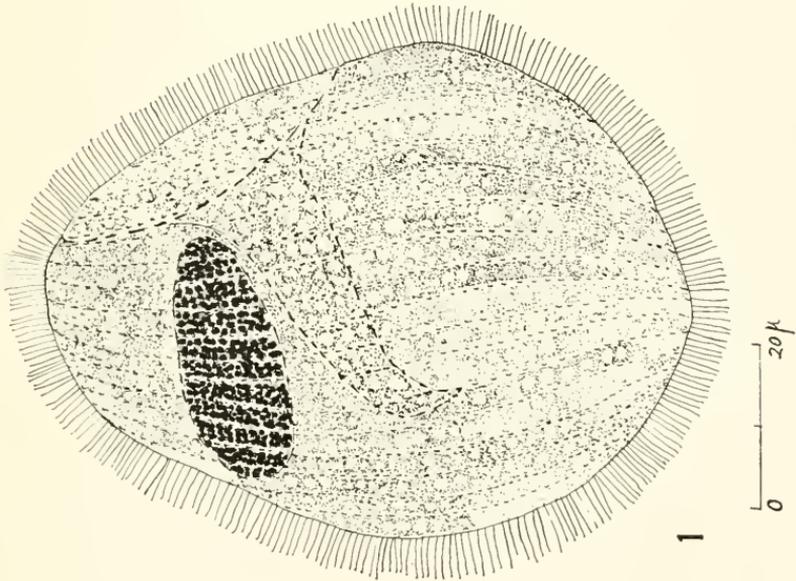
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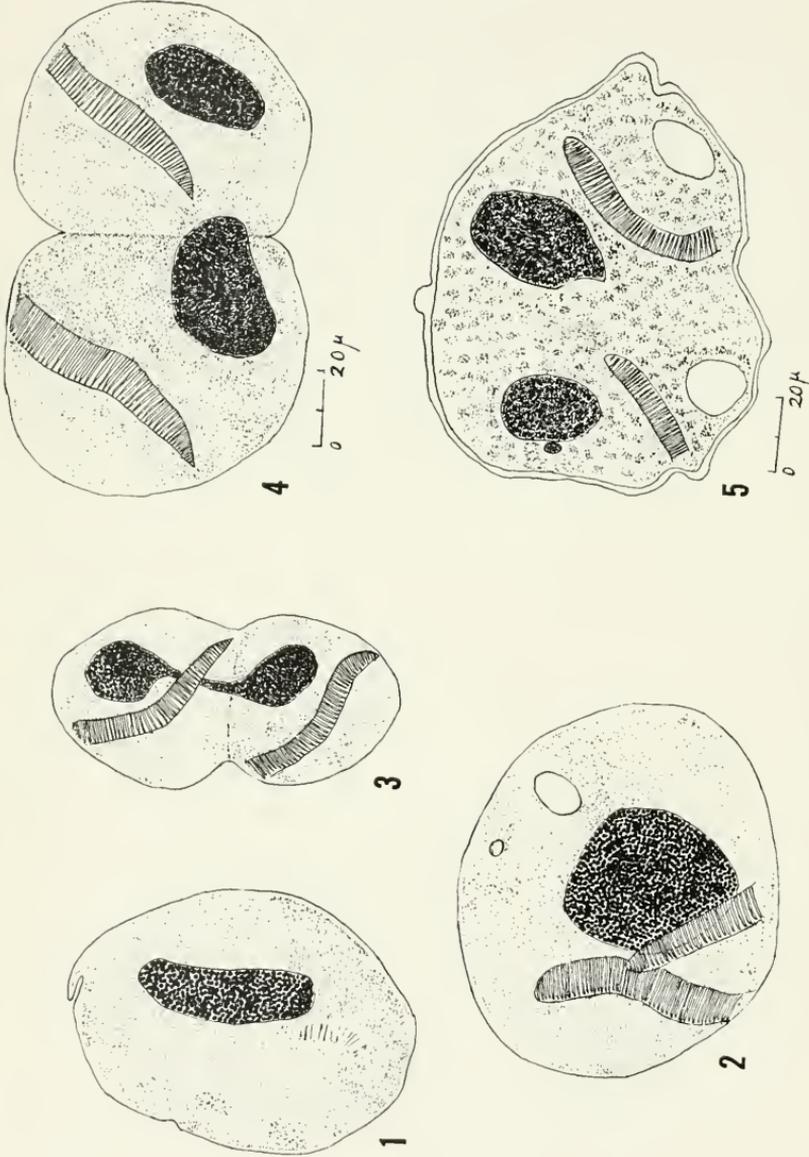
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NYCTOTHERUS OSMODERMAE, NEW SPECIES.

1, External view and structure; 2, internal view and organelles.



NYCTOTHERUS OSMODERMAE. NEW SPECIES.

1, Disappearance of organelles, and elongating nucleus. 2, Formation of new organelles, and old nucleus intact. 3, Division of nucleus and cell body. 4, Daughter nuclei formation completed and cell dividing. 5, Micronucleus and vacuoles prominent.