

ACANTHATRIUM LUNATUM N. SP., A PARASITE OF THE
BIG BROWN BAT AND A KEY TO THE DESCRIBED
SPECIES OF ACANTHATRIUM

(TREMATODA: LECITHODENDRIIDAE)

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Trematodes of the genus *Acanthatrium* Faust, 1919 have frequently been found in bats I have examined but not in so great a number as other lecithodendriid flukes. Species of *Acanthatrium* differ from other Lecithodendriinae in that each possesses pretesticular vitellaria and a genital atrium lined with spines. The species are separated within the genus mainly on the presence or absence of an esophagus, the character of the atrial spines, and the presence or absence of cuticular spines. The known species¹ include *A. sphaerula* (Looss, 1896) Faust, 1919; *A. nycteridis* Faust, 1919; *A. eptesici* Alicata, 1932; *A. molossidis* Martin, 1934; *A. oregonense* Macy, 1939; *A. ovatum* Yamaguti, 1939; *A. alicatai* Macy, 1940; *A. microcanthum* Macy, 1940; *A. pipistrelli* Macy, 1940; *A. jonesi* Sogandares-Bernal, 1956; *A. macyi* Sogandares-Bernal, 1956; *A. amphidymum* Cheng, 1957; *A. oligacanthum* Cheng, 1957; *A. sogandaresi* Coil and Kuntz, 1958; and *A. beuschleini* Cheng, 1959. *Mesothatrium japonicum* (Yamaguti, 1939) Sogandares-Bernal, 1956, a bat trematode of this subfamily known to possess posttesticular vitellaria and spines in the genital atrium, was considered a species of *Acanthatrium* by Cheng in 1957. Cheng revised the description of the genus *Acanthatrium* to definitely include forms having pre- or posttesticular vitellaria or both. In view of a parallel situation occurring in this subfamily between the genera, *Lecithodendrium* and *Prosthodendrium*, I agree with Sogandares-Bernal (1956) that the position of the vitellaria is of generic value and therefore *M. japonicum* should not be in the genus *Acanthatrium*. I propose that the genus *Mesothatrium* is valid and that the genus *Acanthatrium* be restricted to lecithodendriid trematodes having spined genital atria and pretesticular vitellaria.

In a recent parasite survey of bats from localities in Ohio and Kentucky, a new species of *Acanthatrium* was encountered. Fourteen specimens were found in seven of 51 big brown bats. The worms were first examined alive and then fixed in either 10 percent formalin or Lavdowsky's formula of AFA fixing reagent. Certain structures, such as cuticular spines and genitalia, could best be seen in living specimens. Final measurements were made from preserved and stained material mounted permanently in piccolyte or temporarily in glycerin.

***Acanthatrium lunatum* n. sp.**

(Figures 1-4)

The name *lunatum*, from the Latin word "lunatus," refers to the crescent-shaped group of spines in the genital atrium, which character is distinctive for this species. The measurements appearing in parentheses in the following diagnosis are of the type specimen.

Diagnosis (based on 10 specimens).—Body pyriform to oval, 0.94-1.13 mm (0.96 mm) long by 0.36-0.55 mm (0.50 mm) wide. Minute cuticular spines covering either entire or anterior $\frac{3}{4}$ of body. Subterminal oral sucker comparatively large, 111-152 μ (152 μ) long by 118-146 μ (128 μ) wide. Pharynx muscular, 37-57 μ (47 μ) long by 39-64 μ (42 μ) wide. Esophagus in relaxed specimens attains length of 150 μ . Intestinal ceca of lecithodendriid type, 174-202 μ (187 μ) long by 37-59 μ (44 μ) wide. Acetabulum about same size as oral sucker, 112-151 μ (114 μ) long by 125-154 μ (154 μ) wide, located approximately midway in body. Testes lateral,

¹Etges (1960, J. Parasitol. 46:235-240) describes a new species, *Acanthatrium anaplocami*, which is not included in this paper.

in same general transverse plane as acetabulum, slightly preacetabular or postacetabular depending on amount of body contraction. Right testis 99–171 μ (168 μ) long by 79–148 μ (148 μ) wide; left testis 111–172 μ (148 μ) long by 86–138 μ (112 μ) wide. Ovary oval, 91–142 μ (127 μ) long by 79–100 μ (90 μ) wide, on right side, dorsal, posterolateral to acetabulum, at an angle between right testis and acetabulum. Prostate mass large, 143–254 μ (149 μ) long by 143–222 μ (143 μ) wide, containing coiled seminal vesicle, numerous prostate cells, and anterior genital atrium lined with numerous long spines. Spines of genital atrium 15–28 μ (26 μ) long, 100 or more in number, arranged in a crescentic group in a brush-like fashion. Genital pore slightly posterior to atrial spines. Seminal receptacle and Laurer's canal present. Vitellaria pretesticular, bilateral, consisting of medium to large follicles, 10 to 15 per lateral group, anterior to testes but not extending mesad to esophagus. Uterus bulging with light brown eggs near metraterm. Eggs numerous, 25–30 μ (25–26 μ) long by 13–17 μ (14–17 μ) wide.

Host.—*Eptesicus fuscus fuscus* (Beauvois).

Site of infection.—Small intestine.

Locality.—Eleven specimens, including the type, from four bats taken in Columbus (Franklin County), Ohio. Three specimens from three hibernating bats taken in a cave at Carter Caves State Park (Carter County), Kentucky.

Type specimen.—Holotype and one paratype in U. S. National Museum Helminthological Collection, No. 38890. Other paratypes in The Ohio State University Helminthological Collection and in my collection.

This trematode has the arrangement of organs similar to *Acanthatrium pipistrelli* but differs from it primarily in the character of the atrial spines, the length of the esophagus, and the possession of cuticular spines. As indicated by Macy (1940), the slender atrial spines of *A. pipistrelli* are 25 μ long and number about 35; they are arranged in a compact slightly curved group. The atrial spines of *A. lunatum* are about three times as numerous and arranged in a broad crescentic group. The esophagus of *A. pipistrelli* is extremely short and there are no spines on the body surface; *A. lunatum* possesses a long esophagus and cuticular spines. The atrial spines of *A. eptesici*, another species closely resembling *A. lunatum*, are 25 μ long but arranged in a narrow compact group in the anterior part of the prostate mass rather than in a broad crescentic group as in *A. lunatum*. *A. eptesici* does not possess cuticular spines. *A. lunatum* differs from all other members of this genus mainly in the arrangement, size, and number of atrial spines.

Key to the Species of the Genus *Acanthatrium*

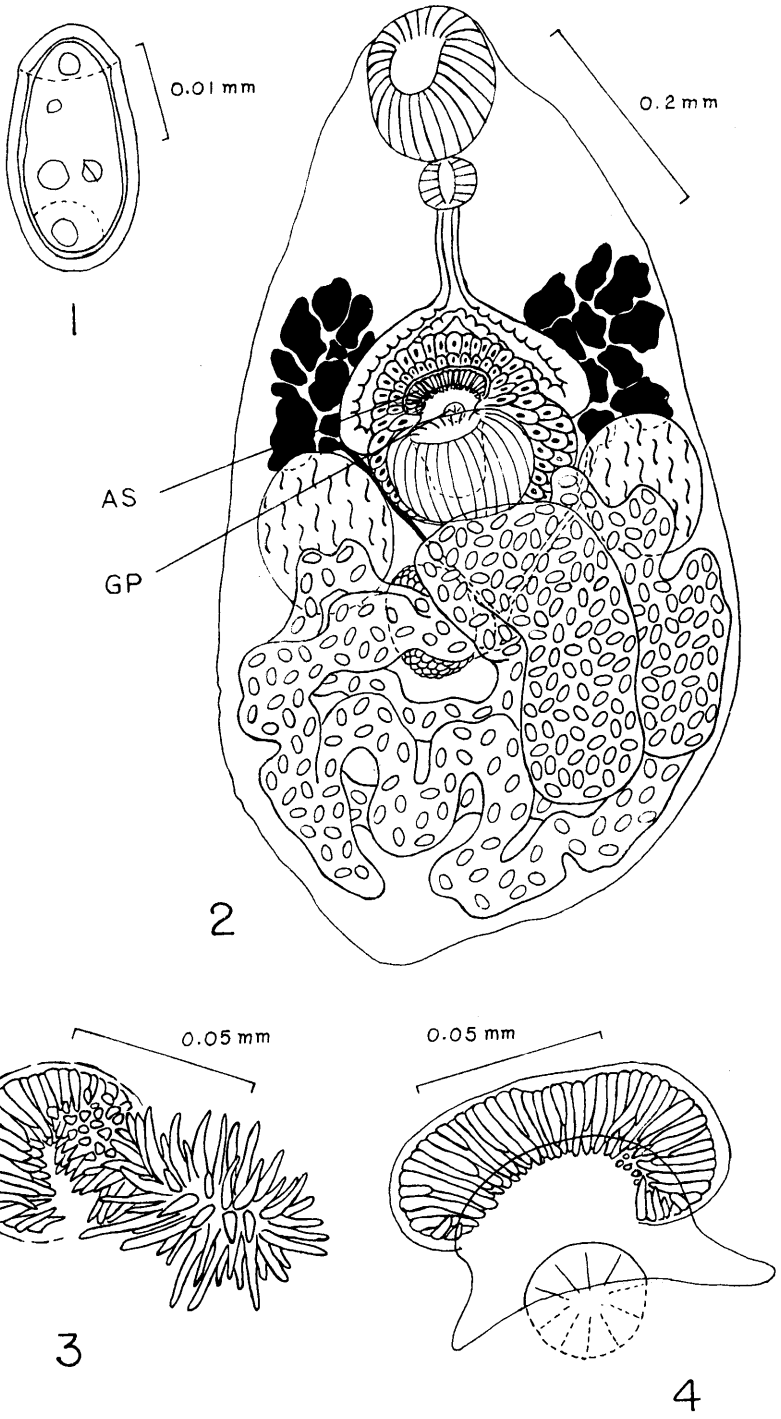
1.	Esophagus present	2
1'	Esophagus absent	15
2(1).	Cuticula spinose	3
2'	Cuticula not spinose	6
3(2).	Atrial spines 15–28 μ long, 100 or more in number	<i>lunatum</i>
3'	Atrial spines less than 15 μ long, less than 12 in number	4
4(3')	Atrial spines 7 in number, 7–8 μ long; eggs 28 μ x 14 μ	<i>macyi</i>
4'	Atrial spines less than 7 μ long	5
5(4')	Atrial spines 11 in number, 3–5 μ long; eggs few, 31–50 μ x 10–28 μ	<i>beuschleini</i>
5'	Atrial spines 9 in number, 2 μ long; eggs numerous, 27 μ x 19 μ	<i>oligacanthum</i>
6(2')	Ovary multi-lobed, in same transverse field as prostate mass	<i>sphaerula</i>
6'	Ovary generally spherical or oval, not multi-lobed, posterolateral to prostate mass	7

EXPLANATION OF FIGURES IN PLATE

1. *A. lunatum*. Egg.
2. *A. lunatum*. Ventral view of type specimen.
3. *A. lunatum*. Atrial spines of a paratype showing their brush-like arrangement.
4. *A. lunatum*. Atrial spines of type specimen.

AS—Atrial Spines.

GP—Genital Pore.



7(6').	Genital atrium divided into two or more chambers	8
7'.	Genital atrium consisting of only a single chamber	10
8(7).	Atrium divided into two chambers, atrial spines 14 μ long	<i>amphidymum</i>
8'.	Atrium divided into three chambers, atrial spines 10–26 μ long	9
9(8').	Atrial spines 10–15 μ long	<i>nycteridis</i>
9'.	Atrial spines 22–26 μ long	<i>alicatai</i>
10(7').	Atrial spines 25 μ long	11
10'.	Atrial spines less than 20 μ long	12
11(10).	Atrial spines in single compact parallel group directed caudad; oral sucker larger than acetabulum	<i>eptesici</i>
12(10').	Atrial spines circumferentially arranged; esophagus three or more times as long as pharynx	<i>microcanthum</i>
12'.	Atrial spines not circumferentially arranged; esophagus less than three times as long as pharynx	13
13(12').	Esophagus at least twice as long as pharynx; atrium with a conical diverticulum lined with spines 18 μ long	<i>ovatum</i>
13'.	Esophagus shorter than pharynx; atrium free of a diverticulum	14
14(13').	Oral sucker spherical or ellipsoidal, 0.070–0.077 mm wide; body length 0.46–0.65 mm	<i>jonesi</i>
14'.	Oral sucker not spherical or ellipsoidal, 0.11–0.16 mm wide; body length 0.70–0.81 mm	<i>sogandaresi</i>
15(1').	Cuticula spinose, spines on anterior $\frac{1}{2}$ of body; atrial spines 5 μ long, directed cephalad	<i>molossidis</i>
15'.	Cuticula aspinose; atrial spines 10–15 μ long, directed caudad	<i>oregonense</i>

Acanthatrium nycteridis plicati Bhalerao, 1926, a subspecies, differs from *A. nycteridis nycteridis* mainly in the arrangement of the uterine coils, and the body, oral sucker, and acetabulum measurements being greater.

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