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Hymenolepis diminuta IN A GRAY SQUIRREL FROM INDIANA*

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Abstract: A single specimen of *Hymenolepis diminuta* (Rudolphi, 1819) was recovered from a gray squirrel (*Sciurus carolinensis*) in Indiana. This represents the first confirmed report of this species of tapeworm in the gray squirrel.

Tree squirrels, unlike other rodents, are largely free from adult stages of helminth parasites, particularly the cestodes. Although there are several reports of cestode larvae from squirrels,^{1,3,4,5,12} there are only two reports^{6,8} of the occurrence of adult tapeworms in the gray squirrel.

CASE REPORT

One of 28 gray squirrels live-trapped in Tippecanoe County, Indiana, as part of a continuing survey of coccidia of squirrels, was unusually furious and restless in its behavior so as to suggest rabies. Examination of the feces showed that the animal was infected with a tapeworm.

The infected squirrel was kept in captivity for a period of 3 months for observation and also to allow ample time for the tapeworm, in case it was immature, to mature. During the first 2 months, there was a significant increase in the number of eggs discharged as determined by observation of crushed fecal pellets under the low power (100X) of a microscope. The animal remained aggressive as at the time of its capture.

At the end of 3 months, the squirrel was killed and a single 45 cm long tapeworm was recovered from the mid-portion of the small intestine. The worm was relaxed and fixed in AFA (six parts

formalin, 1 part glacial acetic acid, 20 parts 95% alcohol, and 40 parts distilled water for further study. Whole mounts, stained with Harris' haematoxylin or borax carmin, were made of the scolex and other representative sections of the strobila. A detailed microscopic study of the scolex and representative proglottids showed that the tapeworm was *H. diminuta* Rudolphi, 1819.

DISCUSSION

A perusal of the literature revealed six surveys^{2,5,6,7,8,9} for the helminth parasites of small mammals which included the gray squirrel. In an unpublished study, Katz⁹ recorded *Catenotaenia* sp. and *Hymenolepis* sp. from the gray and fox squirrels in southern Ohio. He could not identify the species as the scolices were unavailable. Rausch and Tiner,⁹ who studied the helminths of sciurids of the North Central States, reported *Catenotaenia pusilla* and *Hymenolepis diminuta* from the fox squirrel, *S. niger rufiventer*, but did not find any tapeworms in the gray squirrel. In their paper, they included Katz's results and stated that the tapeworms recorded by him were probably *C. pusilla* and *H. diminuta*. Rausch and Tiner⁹ did not examine sciurids from Indiana. Chandler,² who examined both fox and gray squirrels for their helminth

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parasites in southeastern Texas, did not find any tapeworms in the gray squirrel. Rankin⁸ found one gray squirrel out of 20 infected with *Cittotaenia pectinata* (Goeze, 1782) in western Massachusetts. Schiller^{10,11} showed that gray squirrels could be experimentally infected with *H. nana*. However, he observed that in nature, gray squirrels did not become infected in spite of being exposed to the

eggs. Parker and Holliman⁷ examined 168 gray squirrels in Virginia for their helminth parasites and found four animals harboring the nematode *Gongylonema pulchrum*. It is not known whether any of the squirrels had tapeworms. Thus, as far as it can be determined, this constitutes the first report of *Hymenolepis diminuta* infection in a gray squirrel.

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LITERATURE CITED

1. BAYLIS, H. H. 1939. Further records of parasitic worms from British vertebrates. Ann. and Mag. Nat. Hist. Ser. II. 4: 473-498.
2. CHANDLER, A. C. 1942. Helminth parasites of tree squirrels in southeast Texas. J. Parasit. 28: 135-140.
3. FREEMAN, R. S. 1954. Studies on the biology of *Taenia crassiceps* (Zeder, 1800) Rudolphi, 1810. J. Parasit. 40: Sec. 2. 41.
4. GRAHAM, E. and J. UHRICH. 1943. Animal parasites of the fox squirrel *Sciurus niger rufiventer* in southeast Kansas. J. Parasit. 29: 159-160.
5. HARKEMA, R. 1936. The parasites of some North Carolina Rodents. Ecol. Monogr. 6: 153-232.
6. KATZ, J. S. 1938. A survey of the parasites found in and on the fox squirrel (*Sciurus niger rufiventer* Geoffroy) and in the southern gray squirrel (*Sciurus carolinensis* Gmelin) in Ohio. Unpublished thesis, Ohio State University.
7. PARKER, J. C. and R. B. HOLLIMAN. 1971. Notes on *Gongylonema pulchrum* Molin, 1857 (Nematoda: Spiruridae) in the gray squirrel in southwestern Virginia. J. Parasit. 57: 629.
8. RANKIN, J. S., Jr. 1946. Helminth parasites of birds and mammals in western Massachusetts. Amer. Midl. Nat. 35: 756-768.
9. RAUSCH, R. and J. D. TINER. 1948. Studies on the parasitic helminths of the North Central States I. Helminths of Sciuridae. Amer. Midl. Nat. 39: 728-747.
10. SCHILLER, E. L. 1959. Experimental studies on morphological variation in the cestode genus *Hymenolepis* II. Morphology and development of the strobilate phase of *Hymenolepis nana* in different mammalian host species. Exptl. Parasit. 8: 215-235.
11. SCHILLER, E. L. 1959. Experimental studies on morphological variation in the cestode genus *Hymenolepis* IV. Influence of the host on variation in *H. nana*. Exptl. Parasit. 8: 581-590.
12. SCHWARTZ, B. 1928. The occurrence of larval tapeworms in the liver, lungs, spleen, kidneys, omentum and heart of the squirrel (*Sciurus carolinensis*). Hel. Soc. Wash. in J. Parasit. 15: 67.

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