ABSENCE OF RABIES IN SOME BATS AND SHREWS FROM SOUTHERN ILLINOIS

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During July, 1958, a project was initiated in southern Illinois to determine the relationship of distribution, abundance, and ecology of wildlife vectors to the incidence of rabies (National Institutes of Health Project E-1349). Two of several related studies involved the collection and testing of bats and shrews for rabies.

The fact that bats sometimes carry rabies is becoming well known; each year several bats are received for rabies determination in the laboratories of the Illinois Department of Health. The history of chiropteran rabies in the United States and elsewhere has been well summarized by Martin (1959). In October, 1959, Illinois became the twenty-third state to report bat rabies (U. S. Dept. of Hlth., Ed., and Welfare, 1959), and Kansas recently became the thirty-first state to report rabies in bats (U. S. Dept. of Hlth., Ed., and Welfare, 1961).

Insectivores as possible natural hosts for rabies are discussed by Verts and Barr (1960), but no reference concerning rabid shrews has been found. Two hundred and sixty-six shrews (Verts and Barr, 1960) and 559 bats (Verts and Barr, 1961) from northwestern Illinois have been tested for rabies, all with negative results.

In the present study, 93 bats, representing seven species, were collected from abandoned silica mines and natural caves in three counties (Union, Alexander and Pulaski) in southern Illinois between December, 1958, and March, 1959 (Table 1). All bats were captured within a radius of less than 16 miles from a site where rabid skunks were found in June and September, 1958. Twenty-five shrews and one mole were caught from August, 1958 to April, 1959 (Table 2); nine of the shrews were trapped within ¼ mile and the remainder less than 20 miles from recent sites of rabies.

Brain and salivary gland tissues from all insectivores and 35 of the bats were removed in the laboratory and stored in a deep-freeze cabinet at minus 20° C in separate tubes containing a solution of equal volumes of glycerine and twice-normal physiological saline until all tests had been completed. Laboratory technique for testing these tissues was the same as described by Verts and Barr (1960).

The remaining 58 bats were tested by Mr. Nathan Nagle, Director, Illinois Department of Health Laboratory, Carbondale. Some of the tissues were preserved in the manner previously described, but most brains

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TABLE 1.—Species of bats and numbers of tissues tested for rabies from southern Illinois.

Species	Number of brains examined	Number of salivary glands examined
Pipistrellus subflavus	38	38
Myotis keenii	17	17
Myotis lucifugus	6	6
Myotis sodalis	1	1
Eptesicus fuscus	15	15
Plecotus rafinesquii	8	8
Lasionycteris noctivagans	8	8
Totals	93	93

TABLE 2.—Species of insectivores and numbers of tissues tested for rabies from southern Illinois.

Species	Number of brains examined	Number of salivary glands examined
Blarina brevicauda	24	24
Sorex longirostris	1	1
Scalopus aquaticus	1	1
Totals	26	26

and salivary glands were placed in sterile glycerine when removed from the animal. They were allowed to stand for 24 hours at room temperature before being used in mouse inoculation tests. Sections of brain and salivary gland tissues from each bat were ground with pestle and mortar into an emulsion, mixed with nine parts of 0.9 per cent saline and allowed to stand for 5 minutes at room temperature. Quantities of 0.03 ml of the supernatant fluid from each suspension were injected intracerebrally into three 4- to 6-week old mice using a 0.25 ml tuberculin syringe and a 27 gauge needle; this is essentially the mouse inoculation test described by Koprowski (1954). Mice dying within 4 days after inoculation were considered to have succumbed for rea-

sons other than rabies infection. The inoculated mice were observed for 28 days.

Results of tests of all tissues were negative for rabies. The possibility of finding rabid shrews and bats by random collections is apparently remote, but those exhibiting unusual behavior will continue to be examined.

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