

OBSERVATIONS ON PERIODICAL CICADAS (BROOD XXIII) IN INDIANA IN 1989 (Homoptera-Cicadidae)

FRANK N. YOUNG

Professor Emeritus, Biology Department, Indiana University
Bloomington, IN 47405

and GENE KRITSKY

Professor and Chairman, Biology Department, College of Mount St. Joseph,
Mount St. Joseph, OH 45051

ABSTRACT: Periodical cicadas of the 13-year Brood XXIII emerged on schedule in southwestern Indiana and adjacent areas of Illinois and Kentucky. *Magicicada trecassini* Alexander and Moore seems to have been the commonest species observed, but *M. tredecim* (Walsh and Riley) and *M. tredecula* Alexander and Moore were noted. The occurrence in most counties was relatively light and scattered. Cicadas or their characteristic flags or oviposition scars were observed in Daviess, Gibson, Knox, Posey, Spencer, Sullivan, Vanderburg, and Warwick counties Indiana as reported in 1976.

New records are reported for Pike and western Greene counties which were not included in Marlatt's original list (1923). Possible emergences occurred in Vigo and Clay counties.

Clear evidence of overlapping of broods or local colonies was observed in Sullivan County (Shakamak State Park) where oviposition scars of the 1987 and 1989 broods were observed on the same shrubs and trees. In general, however, the two broods appear to interdigitate rather than overlap.

Brood XXIII of the 13 year periodical cicadas (Homoptera-Cicadidae) emerged as predicted in late May and early June in the lower Wabash Valley in Indiana and adjacent areas of Kentucky and Illinois. Emergence seemed to be somewhat lighter than the major emergences in 1987 of the 17 year Brood X. The reported observations of adults indicate that *Magicicada trecassini* Alexander and Moore was the primary species involved. *M. tredecim* (Walsh and Riley) and *M. tredecula* Alexander and Moore occurred in smaller numbers. Oviposition scars of all three species were sometimes found on the same shrubs or trees.

M. trecassini egg nests were collected from Posey County and examined for hatched eggs. The counts revealed that 758 eggs out of a total sample of 819 eggs or 92.6% of the eggs examined had hatched. This was considerably higher than the hatch rate of 70.8% found for brood X which emerged in 1987. The reasons for this increased hatch rate are unknown, but it may be possible that the stability of brood XXIII's distribution over the past century compared to the reduction of brood X in several counties is related to its higher hatch rate (Kritsky, 1990).

Emergence of one or more of the species occurred in the 12 stations established in 1973 and checked in 1976 (Young and Zimmerman, 1977). In addition, new records of emergence were made in Pike and western Greene counties of Indiana, not included in Marlatt (1923). Emergence may have occurred in southern Clay County and Vigo County. No observations were reported from other counties listed by Marlatt (1923).

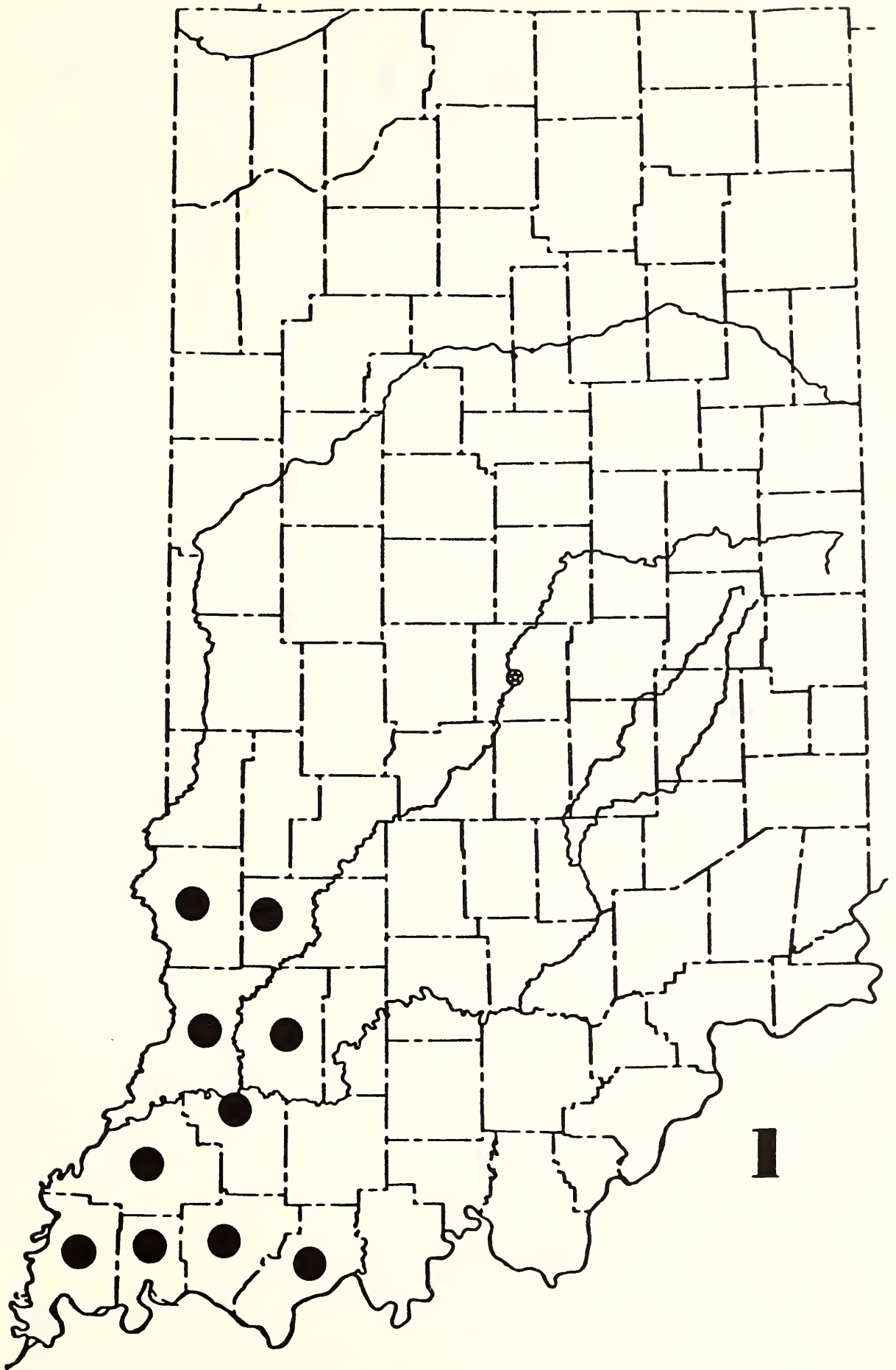
Clear evidence of emergence was found in Shakamak State Park in Sullivan County. Here in several low areas oviposition scars were found on red maple and other small

trees or shrubs. In places, the scars of oviposition of Brood X which emerged in the area in 1987 were present on the older branches of the same plants on which oviposition occurred in 1989. This is the first positive evidence of two broods occurring in the same area reported from Indiana. In general the colonies of the different broods, if they occur in the same county are separated and interdigitated.

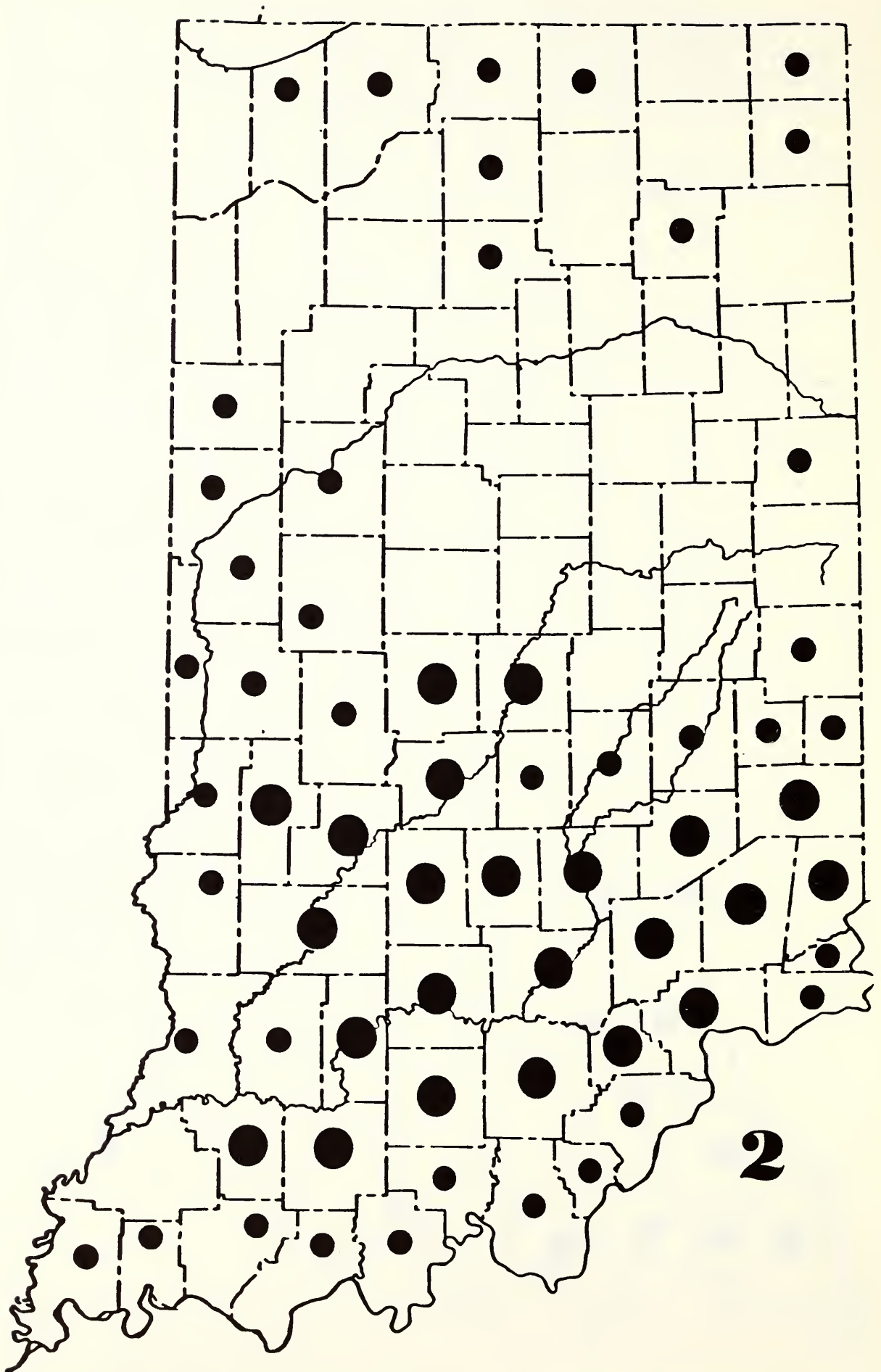
The counties in which emergence of Brood XXIII was observed or reported are indicated on Map 1. Counties in which Brood X occurred in 1987 are indicated on Map 2.

LITERATURE CITED

- Kritsky, G. In press. An historical analysis of the periodical cicadas in Indiana. Proc. Indiana Acad. Sci. (in press).
- Marlatt, C. L. 1923. The Periodical Cicada. U.S. Dept. Agric., Bur. Ent., Bull. 71:183 p., illus.
- Young, F. N. and R. B. Zimmerman. 1977. Observations on Periodical Cicadas (Brood XXIII) in Indiana in 1976. Proc. Indiana Acad. Sci., 86:244-245.
- Young, F. N. and G. Kritsky, In press. Observations on Periodical Cicadas (Brood X) in Indiana in 1987. Proc. Indiana Acad. Sci.



1. Map on Indiana showing reported occurrence of periodical cicadas of Brood XXIII in 1989.



2. Map of Indiana showing reported occurrence of periodical cicadas of Brood X in 1987. Large circles indicate heavy and widespread emergence. Smaller circles indicate light or scattered emergences (from Young and Kritsky 1990).