

BRIEF NOTE

The 1991 Emergence of the Periodical Cicadas (Homoptera: Cicadidae: *Magicicada* spp.: Brood XIV) in Ohio¹

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ABSTRACT. Periodical cicadas of the 17-year brood XIV emerged in parts of southern Ohio in 1991. The emergence was heaviest in extreme southern Ohio where eastern Hamilton, Clermont, Brown, Adams, Scioto, Lawrence, Highland, and Ross counties reported the heaviest populations. Lighter and scattered emergences were reported in Champaign, eastern Butler, southern Warren, Clinton, Fayette, Greene, Pike, Jackson, Gallia, and Washington counties. The distribution of brood XIV in Ohio has remained relatively constant during the past two centuries.

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INTRODUCTION

Brood XIV of the periodical cicadas emerged in parts of southern Ohio in May and June 1991. All three periodical species, *Magicicada septendecim*, *M. cassini*, and *M. septendecula* were collected. Periodical cicadas were first recorded in Ohio when they emerged in Brown County in 1804 and in the years since Ohio has consistently witnessed four broods of 17-year cicadas. Brood V occurs over most of the eastern half of Ohio and brood VIII occurs in Trumbull, Portage, Mahoning, Columbiana, Jefferson, and Carroll counties (Forsythe 1976). Brood X, which last emerged in 1987, occurs in 26 western counties (Kritsky 1988), and brood XIV cicadas have been reported in 27 southern counties during the past century. This year, 18 of those 27 counties witnessed the emergence.

MATERIALS AND METHODS

A news media campaign was begun in March 1991 to increase awareness of the 1991 emergence by the public in the 27 counties with historical records of previous emergence. The campaign encouraged citizens to contact the author when the cicadas emerged in their area. During the emergence peak, county agricultural agents were contacted by mail to verify the public response. Final verification was made by specimens and/or eggnecks collected and identified by the author. Voucher specimens are deposited in the Dury Insect Collection at the Cincinnati Museum of Natural History.

RESULTS

The periodical cicada phenology in southern Ohio was as follows: On 8 May scattered cicada emergences were reported in Hamilton and Clermont counties. By 17 May the emergence was reported in 18 Ohio counties. Emergence of adults was nearly complete by 20 May. Chorusing males were heard until 20 June. First instar nymphs began to hatch by 18 July, and 120 eggnecks collected in late August from sugar maples in Adams

County revealed 1,478 hatched eggs and 357 unhatched eggs, for a hatch rate of 80.5%.

The media campaign resulted in over 700 calls and letters. This, combined with a 100% response from the county agricultural agents, provided the most complete coverage of brood XIV since the 1940 emergence. The emergence was centered in southern Ohio where eastern Hamilton, Clermont, Brown, Adams, Scioto, Lawrence, Highland, and Ross counties reported the heaviest populations with over 50 periodical cicadas emerging per square meter. Lighter and scattered emergences were reported in Champaign, eastern Butler, southern Warren, Clinton, Fayette, Greene, Pike, Jackson, Gallia, and Washington counties (Fig. 1).

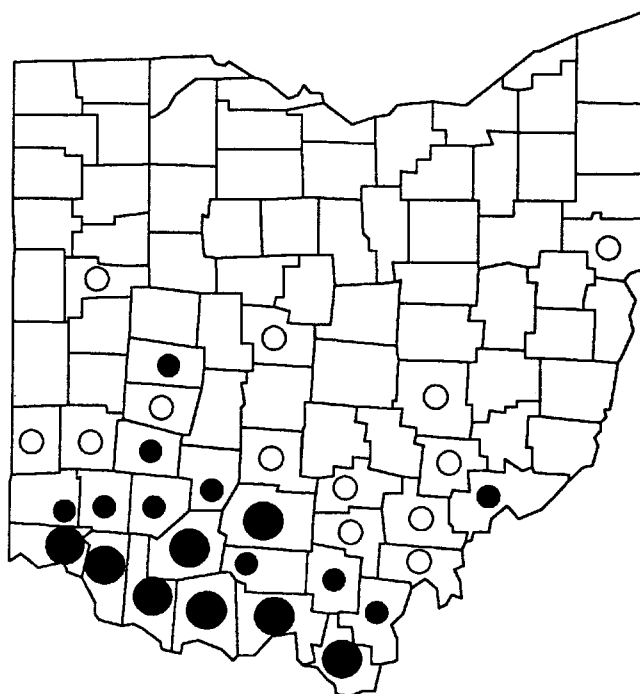


FIGURE 1. Distribution of periodical cicadas in Ohio during 1991. Dark circles occur in counties reporting emergences. Larger circles represent a heavier emergence than smaller circles. Open circles represent counties where periodical cicadas had been recorded in the past, but were not reported in 1991.

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DISCUSSION

The distribution of brood XIV is relatively unchanged in Ohio during the past two centuries. Of the 27 counties reporting historical records of brood XIV cicadas, only 19 show a consistent pattern of consecutive emergences 17 years apart during the Nineteenth century (Hyslop 1940). Brood XIV now appears to be extinct in Meigs and Vinton counties. Historical records from Washington County are all from this century. This stability of brood XIV in Ohio is unlike the situation in Indiana which has witnessed a significant reduction in brood XIV cicadas. The area of Indiana's brood XIV disappearance overlaps with the distribution of brood X which emerges four years ahead of brood XIV (Kritsky 1988a). In Ohio, broods X and XIV do not significantly overlap (Kritsky 1988b). There is a region of overlap in eastern Hamilton County, and a review of historical records and museum specimens from that county indicates that the western limit of brood XIV in Hamilton County has progressively moved eastward as brood X has increased in density. It is likely this disappearance of brood XIV in regions where it overlaps with brood X is the result of four-year accelerations of brood XIV populations. Four-year accelerations of brood XIV would result in periodical cicadas emerging the same year as brood X and the result would appear as a heavier-than-expected emergence of brood X. This fits the historical record in Hamilton County during this century.

The eastern limit of brood XIV overlaps with the southwestern distribution of brood V (Forsythe 1976). The relationships between broods XIV and V are unclear. Since the vast majority of periodical cicadas emerge during expected years, four years early, or one year late (Kritsky 1988a), it is unlikely that broods XIV and V share as close

an evolutionary relationship as do broods X and XIV in western Ohio.

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LITERATURE CITED

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 Hyslop, J. A. 1940 The periodical cicada, brood XIV. *Insect Pest Survey Circular E-502.* 15 pp.
 Kritsky, G. 1988a An historical analysis of periodical cicadas in Indiana. *Proc. Indiana Acad. Sci.* 97: 295-322.
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APPENDIX

Counties and towns reporting periodical cicadas in 1991.

Adams: Seaman, Serpent Mound, Unity, West Union; **Brown:** Georgetown, Mt. Orab, Ripley; **Butler:** Hamilton, West Chester; **Champaign;** **Clermont:** Amelia, Batavia, Bethel, Felicity, Goshen, Miami, Milford, New Richmond, Perintown; **Clinton;** **Fayette:** southern and southeastern parts of county; **Gallia;** **Greene;** **Hamilton:** Amberley, Blue Ash, Cheviot, Cincinnati, Indian Hill, Kenwood, Maderia, Mariemont, Montgomery, Newton, Sharonville, Symmes Twp., Terrace Park; **Highland:** Ft. Hill, Hillsboro; **Jackson;** **Lawrence:** Ironton; **Pike:** western half of county; **Ross;** **Scioto:** Portsmouth; **Warren:** Ft. Ancient, Foster, Maineville, Mason, Oregonia; **Washington.**
