

THE SALAMANDERS OF SOUTHEASTERN OHIO*

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This is the first report resulting from a faunal survey of the vertebrates of southeastern Ohio, that has been conducted by the senior author for more than ten years. The junior author has concentrated on salamanders alone for the past three years and the accumulated information makes it advisable to set forth the results. This is especially appropriate for the salamanders, a group for which there is no modern list for the state of Ohio or any large segment thereof.

The literature on southeastern Ohio salamanders is not very extensive. The earlier works of Kirtland (1838), Smith (1882), Wilcox (1891), and Morse (1901, 1904), although purporting to include this section of the state, gave very few or no definite localities. In 1932, Walker and Weller reported *Gyrinophilus porphyriticus duryi* from Adams, Pike, and Highland counties; in 1933 Walker reported finding *Plethodon wehrlei* in Washington county and *Pseudotriton montanus* in Jackson county. Netting and Mittleman (1938) described *Plethodon richmondi* from Athens, Jackson, and Meigs counties. The Green Salamander (*Aneides aeneus*), although first reported for Ohio in 1941, was not found in our area until 11 years later (Gordon, 1952). Bishop (1941) described *Pseudotriton montanus diastictus* as a new subspecies occurring in southeastern Ohio, although Mittleman and Gier (1948) maintained that an isolated population of *P. m. montanus* occurred in Jackson, Gallia, and Athens counties. In 1942, Mittleman described *Gyrinophilus porphyriticus inagnoscus* from southeastern Ohio and, in 1949, *Eurycea bislineata rivicola* as the race of the Two-lined Salamander occurring west of the Allegheny Mountains.

The area included within our definition of southeastern Ohio comprises Washington, Morgan, Athens, Hocking, Ross, Pike, Scioto, Lawrence, Gallia, Meigs, Jackson, and Vinton counties. This area essentially includes all of the unglaciated portion of the Southern Allegheny Plateau. In the following list, each locality record is ascribed to its county and following the locality, in parentheses, is an abbreviation denoting the disposition of the specimen or whence the information concerning the record was obtained. The abbreviations used are: (OUVC) Ohio University Vertebrate Collection; (OSM) The Ohio State Museum; (MC) Marietta College; (CM) Carnegie Museum; (CMNH) Cleveland Museum of Natural History; (OWU) Ohio Wesleyan University; (UIMNH) University of Illinois Museum of Natural History; (NBG) N. Bayard Green; (GMD) George McDuffie; (JC) John M. Condit; (DMD) D. M. Dennis; (RB) Ronald Brandon. All specimens were examined personally unless otherwise noted. References from the literature are cited in the usual manner. Our nomenclature is from the 6th edition of the Check List of North American Amphibians and Reptiles and we use the common names prepared by the Committee on Herpetological Common Names (1956).

The provenance of each specimen is indicated on the outline maps as accurately as possible. Quotation marks around the symbol indicate that no specific locality within that county has been recorded.

Considerable effort has gone into the accuracy and completeness of these distributional data. It becomes apparent that even within a small area, such as

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these dozen counties, salamanders are not uniformly dispersed. Even though intensive collecting has not been possible in all areas, there is no doubt that many townships will remain blank for lack of suitable habitat. It is hoped that these detailed data will be of value years from now for comparative purposes; it would have been exciting to us had it been possible to compare the present day distribution of these salamanders with that of 80 years ago.

A total of 19 species of salamanders has been found within this area and this total is very likely complete. The details of distribution may alter to some degree, principally by the addition of new records that will fill the gaps existing among already recorded collecting sites, but it is now evident that certain species (*A. aeneus*, *P. wehrlei*, for example) have, and will continue to have, very restricted distribution and others (*E. bislineata*, *D. fuscus*) are widespread. Undoubtedly some (*C. alleganiensis*) have had their distribution curtailed.

A list such as this should indicate the relative abundance of the different species, but no method has been devised to evaluate this statistic for salamanders. Some species are easier to find than others but whether this reflects a true picture of their abundance is doubtful. Nevertheless, based on distributional records, frequency in collections, and personal observations, the species may be grouped as follows:

Very Common	Fairly Common	Uncommon	Rare
<i>D. viridescens</i>	<i>N. maculosus</i>	<i>C. alleganiensis</i>	<i>A. texanum</i>
<i>P. cinereus</i>	<i>A. opacum</i>	<i>H. scutatum</i>	<i>A. aeneus</i>
<i>P. glutinosus</i>	<i>A. jeffersonianum</i>	<i>P. ruber</i>	<i>P. wehrlei</i>
<i>D. fuscus</i>	<i>A. maculatum</i>	<i>P. montanus</i>	
<i>E. bislineata</i>	<i>P. richmondi</i>	<i>G. porphyriticus</i>	
	<i>E. longicauda</i>		

In the first category are those species which can be found in many places most of the time; the second group includes those which are restricted to a greater degree in habitat or seasonal occurrence but which, at the right place and at the right time, may be found in reasonable numbers; the third group are those which are never found in any great numbers; the last group includes the three species whose distribution is narrowly limited.

Miscellaneous data on breeding and other aspects of life history have been included whenever the information was available or deemed worthy of recording. Additional details on ecology, taxonomy, and synonymy can be found in Brandon's (1958) report.

Cryptobranchus alleganiensis alleganiensis Daudin, Hellbender.—ATHENS Co. Hocking R., Athens (OU Zool. Dept.). SCOTO Co. Scioto Brush Crk., near Henley (OSM 220). WASHINGTON Co. Muskingum R., Marietta (MC) (fig. 1).

Necturus maculosus maculosus Rafinesque, Mudpuppy.—ATHENS Co. Hocking R., Athens (OUVC 1568, 2764, 2765, 2771, 2854); near Stewart (OUVC 2896); mouty of Hocking R., (fide W. Mansfield). GALIA Co. Raccoon Crk. (OSM 885). HOCKING Co. Hocking R., Logan (RB 88). MEIGS Co. Middle Shade R., Orange Twp. (OUVC 3998); Leading Crk., Salisbury Twp. (RB). WASHINGTON Co. Muskingum R., Marietta (MC) (fig. 2).

Ambystoma jeffersonianum Green, Jefferson Salamander.—ATHENS Co. 2½ mile e of Athens (OUVC 1793); between Chauncey and Nelsonville on US 33 (OUVC 2929); near Stewart (OUVC 2894); Guysville (OUVC 3003); East Branch Sunday Crk., Glouster (OSM 664); Waterloo Wildlife Area (RB 55); Stroud Run, Sec. 13, Canaan Twp. (RB 58). HOCKING Co. Silica Hollow, Goodhope Twp. (OSM 1058); East Buckrun, Goodhope Twp. (OUVC 3956); Benton Twp. (OSM 391); ne Sec. 11, Falls Twp. (OUVC 3323-24). JACKSON Co. no particular locality (OUVC 107) (OSM 985). MORGAN Co. ½ mile se of Bishopville (OUVC 1794). PIKE Co. Coopersville (OSM 884). ROSS Co. 2 mile w of Chillicothe, Scioto Twp. (OUVC

3707). SCIOTO Co. near Bear Lake, Shawnee Forest (GMD). VINTON Co. Wolf Run, se Sec. 34, Elk Twp. (OUVC 3332); near Lake Hope (RB 94) (fig. 3).

The earliest date when eggs were found was on February 9, 1957, when several clusters were observed in a hilltop pond in a deciduous woods near Logan, Hocking County. This pond was approximately five feet square and about two feet deep near the center. Egg masses were attached to petioles of oak leaves, stems of various herbaceous plants, and small tree stems that had fallen into the pond. The number of eggs in several masses varied from 8 to 55, with an average number of 22. On March 2, 1957, 22 adult Jefferson Salamanders, 17

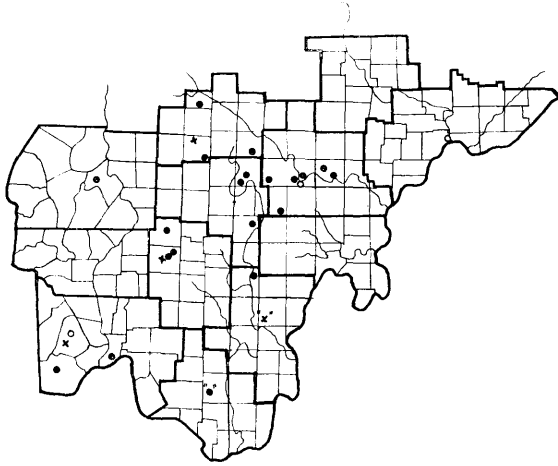


FIGURE 1. The distribution of *Cryptobranchus alleganiensis* (open circles); *Ambystoma opacum* (solid dots); *Hemidactylium scutatum* (crosses).

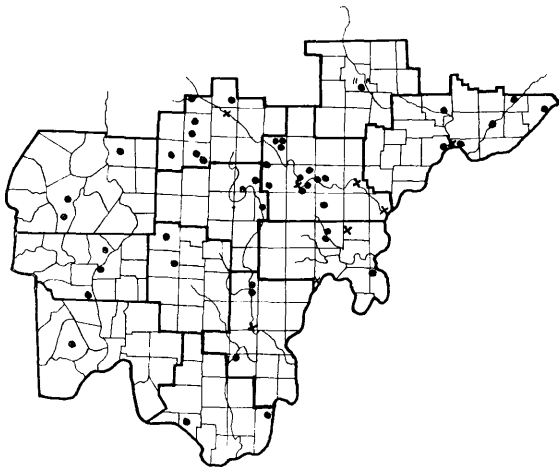


FIGURE 2. The distribution of *Necturus maculosus* (crosses); *Plethodon glutinosus* (solid dots).

males and five females, were taken from the above pond. The males ranged from 150 to 200 mm in length; the females, 160 to 180 mm. Three clusters of eggs were found on February 23, 1957, in a small roadside ditch near Canaanville, Athens Co. Other eggs were collected on March 9, 1957, in a roadside swampy area near Waterloo Wildlife Area, Athens Co., and on

March 17, 1957, a cluster was found in a small, spring-fed pool on an open pastured hillside near Canaanville.

Ambystoma maculatum Shaw, Spotted Salamander.—ATHENS Co. Second St., Athens (OUVC 1805); Carbondale (OUVC 1556); Waterloo Wildlife Area (RB 49, 55). GALLIA Co. near Rodney, Springfield Twp. (OSM 360). HOCKING Co. near Logan, Falls Twp. (RB 13), East Buckrun, Goodhope Twp. (CMNH ZF1507). JACKSON Co. no particular locality (OUVC

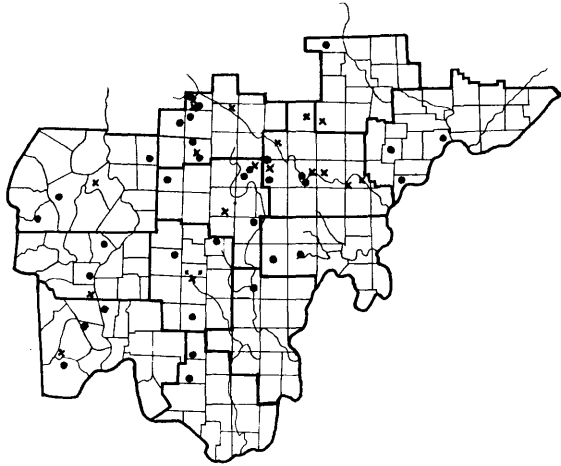


FIGURE 3. The distribution of *Ambystoma jeffersonianum* (crosses); *Diemictylus viridescens* (solid dots).

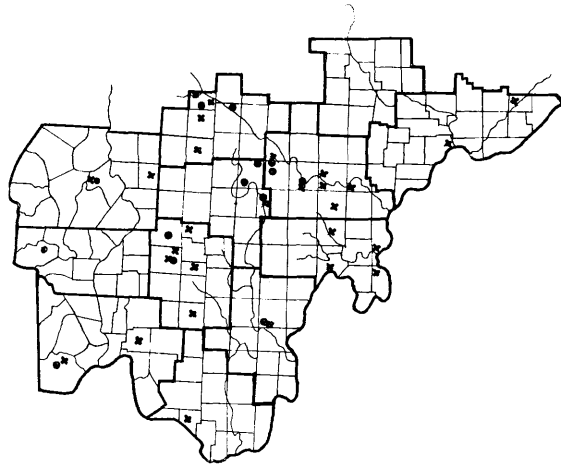


FIGURE 4. The distribution of *Eurycea longicauda* (crosses); *Ambystoma maculatum* (solid dots).

105); Jackson Twp. (OUVC 475); White's Gulch, Liberty Twp. (OUVC 1543). PIKE Co. cave near Byington (OSM 554). ROSS Co. 2 mile w of Chillicothe, Scioto Twp. (OUVC 3706). SCIOTO Co. Shawnee (GMD). VINTON Co. Bolster Hollow, near Lake Hope (RB 61a); King Hollow, n of Lake Hope (RB 96); Ohio 356 near US 50 (RB 49) (fig. 4).

Egg masses were collected on March 6, 1957, March 22, 1957 and April 11, 1958, all from

near Lake Hope, Vinton County. The clusters were attached to the stems of standing herbaceous plants from a few inches to almost a foot below the water surface. The number of eggs in masses varied from 60 to 90.

Ambystoma opacum Gravenhorst, Marbled Salamander.—ATHENS Co. Athens (OUVC 802, 2909); near Armitage (RB 56); Waterloo State Forest (OUVC 2402, 2947); Stroud Run, Canaan Twp. (RB a64); Sec. 7, Lee Twp. (OUVC 2812); near Canaanville (RB 48). GALLIA Co. Sec. 13, Huntington Twp. (RB 57a). HOCKING Co. East Buckrun, Goodhope Twp. (OUVC 3955); Ash Cave (OUVC 3000); near Coonville (RB 75). JACKSON Co. Jackson Twp. (OUVC 476); Rock Run (OSM 921); Sec. 17, Liberty Twp. (OUVC 3699). LAWRENCE Co. no particular locality (NBG). Ross Co. 2 mile w of Chillicothe, Scioto Twp. (OUVC 3677). SCIOTO Co. Shawnee Forest (GMD); Portsmouth (Morse, 1901). VINTON Co. Lake Hope (OUVC 2991); near Zaleski (RB 96); Vales Mills (RB 103).

Although adults were seldom collected except in the autumn, the larvae remained in ponds throughout the winter and into the next spring, and were easily found and collected during this time. In one breeding pond near Waterloo Wildlife Area, Athens County, hundreds of larvae were seen swimming about all winter (fig. 1).

Ambystoma texanum Matthes, Small-mouthed Salamander.—HOCKING Co. Clear Crk. (OSM 907.2). WASHINGTON Co. 6 mile w of Marietta (OUVC 1190); Squaw Hollow, Marietta (OUVC 502).

To our knowledge, the Small-mouthed Salamander has been found in only two areas in southeastern Ohio, although it appears to be more common to our north in Fairfield County and to our west in the Cincinnati area (fig. 5).

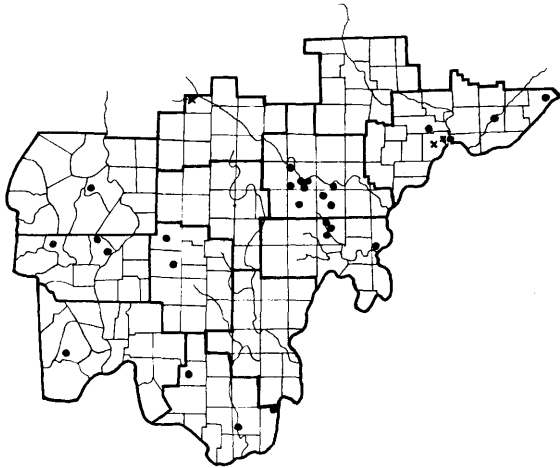


FIGURE 5. The distribution of *Ambystoma texanum* (crosses); *Plethodon richmondi* (solid dots).

Diemictylus viridescens viridescens Rafinesque, Red-spotted Newt.—ATHENS Co. Sell's Park, Athens (RB 23); 2 mile e of Athens (OUVC 63); 3 mile ne of Athens (OUVC 1570); Waterloo Wildlife Area (RB 53); Carbondale Forest (RB 54). GALLIA Co. Vinton, Sec 24, Huntington Twp. (OUVC 3339); no particular locality (OSM 922). HOCKING Co. Salt Crk., 1 mile w of Ash Cave (OUVC 1766); Cantwell Cliffs (OSM 678); Laurelville-Enterprise Rd (OSM 571); Conkle's Hollow (OSM 702); Neotoma, Goodhope Twp. (OSM 295); East Buckrun, Goodhope Twp. (CMNH ZF1506). JACKSON Co. Lake Alma (OUVC 1806); Lake Jackson (OUVC 2498); no particular locality (OUVC 472, 473); Rock Run (OSM 921). LAWRENCE Co. Olive Furnace (OSM 839); Dean Forest, Decatur Twp. (OSM 141). MEIGS Co. Sec. 18, Rutland Twp. (OUVC 218, 222-24); Salem Twp. (OSM 141). MORGAN Co. York Twp. (OSM 864). PIKE Co. Waverly

(OSM 88); near Jasper (OSM 58). Ross Co. Tar Hollow, Colerain Twp. (OUVC 3359); Bainbridge (OSM 1401); Spruce Hill, Twin Twp. (OSM 315). Scioto Co. Lucasville (OSM 199); Shawnee Forest (GMD); nw Rush Twp. (OUVC 3889). VINTON Co. King Hollow, Brown Twp. (RB 49); Lake Hope (OUVC 2397, 2398); near Eagle Mills (OSM a486); Vales Mills (RB 103). WASHINGTON Co. Fairfield Twp. (OSM 619); Belpre Twp. (OSM 586); Squaw Hollow, Marietta (MC) (fig. 3).

On two occasions spring migrations have been observed near Lake Hope in Vinton County. On the night of March 19, 1954, during a warm rain, dozens of newts were observed crossing Ohio Route 278 between Lake Hope and Bolster Hollow. Many crushed individuals were found on the road. On the night of March 29, 1958, several newts were observed crossing the same highway near Zaleski. On May 4, 1958, several pairs of adults were seen clasping in a roadside ditch in Vales Mills, Vinton County. Since the females were quite plump, evidently swollen with eggs, two pairs were brought back to the laboratory. The next day, May 5, the two females laid some eggs, attaching them to blades of grass. These eggs hatched on May 15 and 16. On August 3, 1958, several fully grown larval newts were collected from a roadside ditch near Waterloo Wildlife Area. Within three days after being brought back to the laboratory, all the larvae transformed.

Desmognathus fuscus fuscus Rafinesque, Northern Dusky Salamander.—ATHENS Co. 1 mile se of Athens (OUVC 81, 88, 89); 1½ mile se of Athens (OUVC 432, 433, 801); 1 mile e of Athens (OUVC 1763, 2223); 3 mile ne of Athens (OUVC 1303); 2½ mile ne of Athens (OUVC 1779); 1½ mile e of Athens (OUVC 97, 100); Athens (OUVC 108, 1763); Rock Riffle, Athens (OUVC 1554); Sec. 31, Lodi Twp. (OUVC 2431); Sec. 30, Lodi Twp. (OUVC 423, 424, 1399); ne Sec. 18, Lodi Twp. (RB 21); Lodi Twp. (OUVC 1118); Sec. 8, Lodi Twp. (OUVC 83–86); Shade, Lodi Twp. (OUVC 1127–30); Beaumont, Dover Twp. (OUVC 2319); Waterloo Twp. (OUVC 1877); Waterloo Forest (OUVC 2208); 1 mile s of Waterloo (OUVC 1135); Carbondale (OUVC 90–92, 500, 501, 1148, 1149, 2203); ½ mile n of The Plains (OUVC 82, 87); Trimble Twp. (OUVC 1772); se of Nelsonville (OUVC 1769); Troy Twp. (OSM 653); 1 mile sw of Athens (OUVC 1131); Stroud Run, nw Canaan Twp. (RB 37, 74); Hidden Valley, Sec. 13, Canaan Twp. (RB 58); sw Sec. 25, Rome Twp. (RB 10); Coolville (RB 20); ne Troy Twp. (RB 67). GALLIA Co. ne Sec. 14, Huntington Twp. (OUVC 3343); Springfield Twp. (OSM 360). HOCKING Co. Ash Cave (OUVC 1886) (OSM 273); near Rock House (OSM A662); Cantwell Cliffs (OSM 636); Conkle's Hollow (OSM 702); Neotoma (OSM 165); Salt Crk. Benton Twp. (OUVC 1550) (OSM A645); Sec. 33–34, Benton Twp., 3 mile se of Bloomingville (OUVC 1873); Sec. 19, Goodhope Twp., 3 mile e of Revenge (OUVC 1975); Goodhope Twp. (OSM 89); Salt Creek Twp., near Haynes (OSM 148); Sec. 9, Laurel Twp. (OSM 154); Logan (RB 32); n of Logan, Marion Twp. (RB a32); Old Man's Cave (RB 82); near Blackjack, Big Pine Rd. nw Washington Twp. (RB 43). JACKSON Co. Jackson Twp. (OUVC 523–26, 474, 483, 384); Jackson (OUVC 1188); no particular locality (OUVC 1541) (OSM 833); White's Gulch, Liberty Twp. (OSM 673); Sec. 20, Jefferson Twp. (OUVC 3879). LAWRENCE Co. Decatur Twp. (OSM 358); Dean Forest, Decatur Twp. (OSM 141); Sec. 14, Washington Twp. (OUVC 4002). MEIGS Co. Darwin, Sec. 16, Bedford Twp. (OUVC 93–96, 2230); Pomeroy (OSM 433); Long Bottom (OUVC 3225); Salem Twp. (OSM 359); 2 mile e of Bashan (OSM 818); Sec. 16, Scipio Twp. (OUVC 3866); Forked Run Lake, Olive Twp. (RB 83). MORGAN Co. York Twp. (OSM 864); 6 mile e of McConnellsville (OUVC 2228); se Sec. 17, Malta Twp. (OUVC 3353); Malta Twp. (OSM 398); Kill Deer, Deerfield Twp. (OSM 397). PIKE Co. near Byington, Mifflin Twp. (OSM 339, 554); "Big Cave," Mifflin Twp. (OSM 82); se Perry Twp. (OUVC 3443). Ross Co. near Tucson, Harrison Twp. (OSM A487); Chillicothe (OUVC 2979) (Morse, 1904); Tar Hollow (RB 87); ne Paint Twp. (OUVC 3856). SCIOTO Co. Roosevelt Lake (OUVC 3093–4, 3097–9); Shawnee Forest, Union Twp. (OSM 432); sw Nile Twp. (OUVC 3885); Sec. 30, Madison Twp. (OUVC 3892). VINTON Co. Lake Hope (OUVC 1893); Brown Twp. (RB 85); Knox Twp. (OSM 280); Sec. 4, Richland Twp. (OUVC 3774); Sec. 4, Jackson Twp. (OUVC 3818); s Sec. 7, Eagle Twp. (OUVC 3822). WASHINGTON Co. Marietta Twp. (OUVC 1139–41); Squaw Hollow, Sec. 35, Marietta Twp. (OUVC 2463) (MC); off Indian Run (MC); Belpre Twp. (OSM 586); Lawrence Twp.

(OSM 321); e Sec. 11, Decatur Twp. (RB 69b); near Cutler (RB a44); Sec. 16, Ludlow Twp. (OUVC 3686) (fig. 6).

On January 10, 1957, a hibernating group of fifty adult, several juvenile, and ten larval duskies was discovered in a swampy alder woods near Beaumont, Athens County. After a large, rotten tree stump had been torn out of the damp soil, the salamanders were exposed in depressions in the stump and in soil pockets under and around the stump.

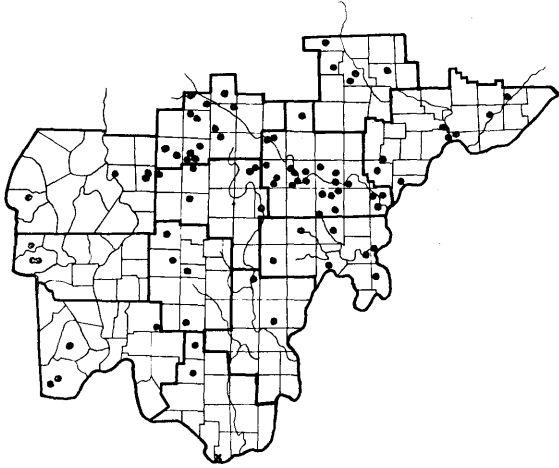


FIGURE 6. The distribution of *Desmognathus fuscus* (solid dots); *Aneides aeneus* (cross).

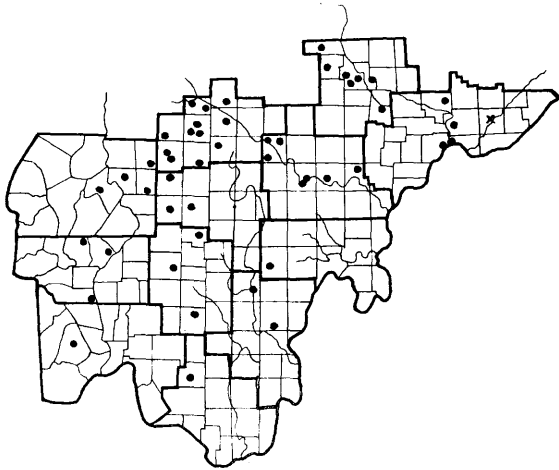


FIGURE 7. The distribution of *Plethodon cinereus* (solid dots); *Plethodon wehrlei* (cross).

Plethodon cinereus cinereus Green, Red-backed Salamander.—ATHENS Co. Athens (OUVC 2227); Sell's Park, Athens (RB); Stroud Run, Canaan Twp. (RB 66d, 74); Rome Twp. (OUVC 3348); Buchtel (OUVC 2206); Enderline Forest, near Carbondale (RB 101); Nelsonville (Morse, 1904). GALLIA Co. sw Sec. 24, Huntington Twp. (OUVC 3858); near Rodney, Springfield Twp. (OSM 360). HOCKING Co. Ash Cave (OUVC 2321); near Rock House (OSM A662); Sec. 35, Marion Twp. (OUVC 3199, 3200); Salt Creek (OSM A645); Salt Creek Twp. (OSM 148); near

Haynes (OSM 214); Clear Creek, Goodhope Twp. (OSM 89); Laurel Twp. (OSM 154); Laurelville (OSM 152); Falls Twp. (RB a34); Conkle's Hollow (RB 43); near Blackjack, Big Pine Rd., Washington Twp. (RB 43); se Sec. 24, Goodhope Twp. (RB 7). JACKSON Co. Lake Jackson, Jefferson Twp. (OUVC 2497); White's Gulch, Liberty Twp. (OUVC 2297) (OSM 673); Washington Twp. (OSM 408). LAWRENCE Co. Decatur Twp. (OSM 358). MEIGS Co. Salem Twp. (OSM 359). MORGAN Co. Malta Twp. (OSM 398); se Sec. 17, Malta Twp. (OUVC 3349-50); Malta (OSM 498); Kill Deer, Deerfield Twp. (OSM 397); York Twp. (OSM 864); along Muskingum, Meigsville Twp. (OSM 588); Roxbury (OSM 866); no particular locality (Morse, 1904). PIKE Co. near Waverly (OSM 59); near Ross Co. line on US 23, Pee Pee Twp. (OSM 180); Starr Hollow, near Coopersville (OSM 587). ROSS Co. Sec. 26, Harrison Twp. (OUVC 3857); Mt. Eyes, Springfield Twp. (OSM 344); Tar Hollow, Colerain Twp. (OUVC 3360); Chillicothe (Morse, 1904). SCIOTO Co. Union Twp. (OSM 200). VINTON Co. se Sec. 8, Richland Twp. (OUVC 3820); Harrison Twp. (OSM 822); near Salt Creek (OSM 472). WASHINGTON Co. Lowell (OSM 756); Marietta (OSM 620); ne Sec. 3, Warren Twp. (OUVC 3286); Sec. 35, Marietta Twp. (OUVC 2464); e Muskingum Twp. (OUVC 3355) (fig. 7).

The Red-backed Salamander is the commonest terrestrial salamander in most areas of southeastern Ohio. However, in some parts of Athens County, the Ravine Salamander, *P. richmondi*, is abundant to the exclusion of *P. cinereus*. The latter is abundant in Sell's Park, Athens, but *richmondi* has never been collected there. Conversely, in the Athens State Hospital woods, 2 miles southwest of Sell's Park, *richmondi* is very common whereas *cinereus* can not be found.

Plethodon glutinosus glutinosus Green, Slimy Salamander.—ATHENS Co. Athens (OUVC 1764, 2461); Rock Riffle, 1½ mile se of Athens (OUVC 65, 67); 2½ mile ne of Athens (OUVC 1778); Carbondale (OUVC 1146, 1147); Waterloo Forest (OUVC 71, 72, 1197); Buchtel (OUVC 2205); 2 mile n of Buchtel (OUVC 1393, 1395); Buffalo Beat, 1½ mile se of Buchtel (OUVC 1761); Stroud Run, Canaan Twp. (RB 84); 7 mile se of Athens, Lodi Twp. (OUVC 1403). GALLIA Co. sw Sec. 24, Huntington Twp. (OUVC 3859); Cadmus, Walnut Twp. (OUVC 3860); 1 mile s of Vinton (RB 86); no particular locality (OSM 833). HOCKING Co. Ash Cave (OUVC 3301-02); near Rock House (OSM A622); Rock House (RB 5); Salt Creek (OSM A645); Salt Creek Twp. (OSM 214); near Haynes, Salt Creek Twp. (OSM 148); Clear Creek (OSM 195); Goodhope Twp. (RB a4); Old Man's Cave (RB 14); Sec. 9, Laurel Twp. (OSM 154); sw Sec. 35, Marion Twp. (RB 15). JACKSON Co. Sec. 14, Liberty Twp. (OUVC 2992, 2993); White's Gulch, Liberty Twp. (OSM 673); Jackson Twp. (OUVC 489); no particular locality (OUVC 471). LAWRENCE Co. Hecla (OSM 838); near Crown City, 3 mile from Gallia Co. line (CM). MEIGS Co. Bedford Twp. (OUVC 74); Darwin (OUVC 2231); 2 mile s of Bashan (OSM 818); no particular locality (OSM 964). PIKE Co. 1 mile s of Picketon (OUVC 2408); Starr Hollow (OSM 587); near Waverly (OSM 59). ROSS Co. Copperas Mt., Twin Twp. (OSM 257); Spruce Hill, Twin Twp. (OSM 315); Sugar Loaf Mt., Green Twp. (OSM 345). SCIOTO Co. Union Twp. (OSM 200). VINTON Co. Knox Twp. (OSM 280); Waterloo Forest (OUVC 1197); Bolster Hollow, Brown Twp. (CMNH ZF1494). WASHINGTON Co. ne Sec. 3, Warren Twp. (OUVC 3285); Squaw Hollow, Sec. 35, Marietta Twp. (OUVC 3288) (MC); along Little Muskingum R., Lawrence Twp. (OSM 830); Lawrence Twp. (OSM 321); Lowell (OSM 756); Sec. 16, Ludlow Twp. (OUVC 3687); nw Sec. 13, Grandview Twp. (RB 102) (fig. 2).

Plethodon richmondi Netting and Mittleman, Ravine Salamander.—ATHENS Co. Athens (OUVC 479-82, 2226); ½ mile e of Athens (OUVC 1408); 1 mile se of Athens (OUVC 30, 434, 435, 437, 438, 1551); 1 mile e of Athens (OUVC 1765); 1 mile sw of Athens (OUVC 25, 1137); ½ mile sw of The Plains (OUVC 1559); Alexander Twp. (OUVC 26, 1123, 1124); Lodi Twp. (OUVC 1401); Sec. 30, Lodi Twp. (OUVC 425-29); Sec. 13, Canaan Twp. (OUVC 3345). JACKSON Co. White's Gulch (OUVC 1540); Jackson Twp. (OUVC 485-87); no particular locality (OSM 966). LAWRENCE Co. Sec. 30, Windsor Twp. (OUVC 3863); Decatur Twp. (OSM 358); near Crown City (CM 14102-04). MEIGS Co. Sec. 16, Bedford Twp. (OUVC 27-29); 1 mile s of Pratts Fork (OUVC 2216); Darwin (OUVC 2232); Forked Run State Park, Olive Twp. (OUVC 3566). PIKE Co. near Waverly (OSM 59); near Ross Co. line, US 23, Pee Pee Twp. (OSM 180); Benton Twp. (OUVC 3442). ROSS Co. 2 mile w of Chillicothe, Scioto Twp. (OUVC

3676). SCIOTO Co. Shawnee Forest (GMD). WASHINGTON Co. Squaw Hollow, Sec. 35, Marietta Twp. (OUVC 2466) (MC); 8 mile nw of Marietta (OUVC 1395); nw Sec. 13, Grandview Twp. (OUVG 3690); Sec. 5, Lawrence Twp. (OUVC 3688-89) (fig. 5).

Three adult female Ravine Salamanders collected from the Athens State Hospital grounds on March 26, 1958, were opened and examined. One specimen, 12.5 cm from snout to tail tip, contained eight well-developed eggs, five in one uterus, three in the other. The eggs measured 2.3 mm to 3.2 mm in diameter. In the stomach were five sowbugs and some semidigested material. The second, 12.4 cm long, contained eggs measuring from 2.3 mm to 3.7 mm in diameter, five in one uterus, four in the other. The stomach contained one spider, one rove beetle, one unidentified insect, and seventeen sowbugs. The third, 8.4 cm long, had no developed eggs, but the stomach contained one rove beetle and nineteen sowbugs.

Plethodon wehrlei Fowler and Dunn, Wehrle's Salamander.—WASHINGTON Co. along Little Muskingum R., Lawrence Twp. (OSM 830) (fig. 7).

Wehrle's Salamander has been collected from only two localities in Ohio: along Sunfish Creek in Monroe County and along the Little Muskingum in Washington County (Walker, 1933).

Hemidactylum scutatum Schlegel, Four-toed Salamander.—GALLIA Co. no particular locality (OSM 883). HOCKING Co. Old Man's Cave (OUVC 1101, 1102) (OSM 799). JACKSON Co. White's Gulch, Liberty Twp. (OSM 673); no particular locality (OSM 833). SCIOTO Co. Shawnee Forest (GMD) (fig. 1).

Gyrinophilus porphyriticus duryi Weller, Kentucky Spring Salamander.—PIKE Co. Coopersville (CM 5850, 5851); 2 mile n of Coopersville (OSM 676); Richardson Hollow, nw Benton Twp. (OUVC 3438); Kincaid Crk., se Perry Twp. (OUVC 3439); Pike State Park (OUVC 3573); 1 mile n of Morgantown (OUVC 3946). SCIOTO Co. Roosevelt Lake, Shawnee S.F. (OUVC 3085); Roosevelt Preserve, Nile Twp. (OSM 963). Weller (1930), Walker (1932), and Mittleman (1942) record specimens from Pike and Scioto Counties (fig. 8).

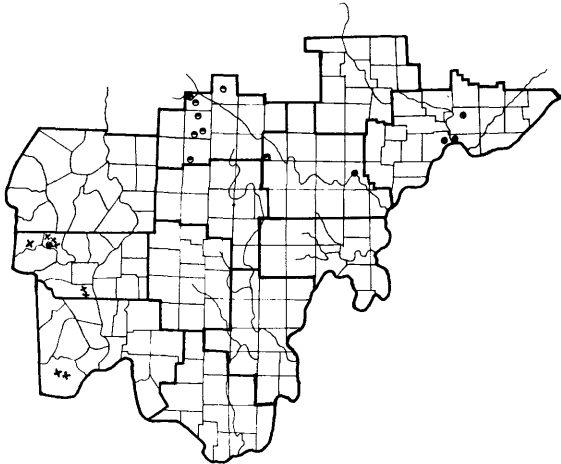


FIGURE 8. The distribution of *Gyrinophilus porphyriticus porphyriticus* (solid dots); *inagnoscus* (half-dots); *duryi* (crosses).

Gyrinophilus porphyriticus inagnoscus Mittleman, Ohio Spring Salamander.—ATHENS Co. Carbondale Forest (UIMNH 36177). HOCKING Co. Salt Creek, 4 mile sw of Bloomingville, Goodhope Twp. (Mittleman, 1942, but cf. Condit, 1958); Clear Creek Canyon, Goodhope Twp. (OWU 3264); Conkle's Hollow State Park (OUVC 3175); Cantwell Cliffs State Park (OUVC 3705, 3896); (OWU 3265); Sec. 27, Laurel Twp. (OUVC 3871); Sec. 32, Marion Twp. (RB 33).

Although the latter is a larval specimen, it is considered to be *inagnoscus* because of its nearness to the Hocking parks (fig. 8).

Gyrinophilus porphyriticus porphyriticus Green, Northern Spring Salamander.—ATHENS Co. Stewart (OUVC 2966). PIKE Co. Pike State Park (OUVC 3256). WASHINGTON Co. ne Sec. 3, Warren Twp. (OUVC 3287, 3294); Sec. 35, Marietta Twp. (OUVC 3292); Squaw Hollow (UIMNH 36169-75) (fig. 8).

The status of *Gyrinophilus* in southeastern Ohio is, to our minds, still unsettled. Brandon (1958), on the basis of specimens available to him, felt that a) *G. p. duryi* is a well defined race occurring in the extreme western portion of our area, with no evidence of intergradation to the east; b) *G. p. inagnoscus* is a poorly defined race, differing from eastern representatives only in pigmentation, and restricted in distribution to Hocking and western Athens Counties; c) the rest of southeastern *Gyrinophilus* are closer to *porphyriticus* than to *inagnoscus* even though Mittleman (1942) considers specimens from Washington County to be *inagnoscus*. Paratypes of *inagnoscus* (UIMNH 36173-75) are considered by us to be closer to *porphyriticus*.

One specimen (OUVC 3256) from Pike County, brought to us and substantiated by William Price, Park Naturalist of the Ohio Division of Parks, is definitely not *duryi* but exactly like the eastern forms. This specimen had been regurgitated by a common garter snake (*Thamnophis sirtalis*). From its excellent condition it could not have been long in the snake's digestive tract and we can only surmise that the salamander had been captured by the snake in Pike State Park. If this assumption is correct, the status of *duryi* as a subspecies of *porphyriticus* needs to be re-examined.

Pseudotriton montanus diastictus Bishop, Midland Mud Salamander.—ATHENS Co. Sec. 20, York Twp. (OUVC 3742). GALLIA Co. no particular locality (OSM 883.5, 919.1, 919.2). JACKSON Co. Washington Twp. (OSM A401, 406); Liberty Twp. (OSM 294.18, A981, 673). LAWRENCE Co. no particular locality (NBG). ROSS Co. Sec. 12, Harrison Twp. (OUVC 3816). SCIOTO Co. Roosevelt State Park (OUVC 2932); Shawnee Forest (GMD). VINTON Co. Lake Hope (OUVC 2969, 3265); King Hollow, near Lake Hope (RB 61b) (fig. 9).

Mittleman and Gier (1948) are of the opinion that some of the *Pseudotriton montanus* in southeastern Ohio are not *diastictus* but an isolated population of *P. m. montanus*, the Eastern Mud Salamander, which occurs to the south and east of Ohio. According to these writers, specimens from Jackson, Gallia, and Athens counties are *P. m. montanus*, those from Jackson and Adams counties are *P. m. diastictus*, and some from Jackson County, a specimen from Ross County, and a specimen from Scioto County, are considered to be intergrades.

However, since specimens in our collection from Athens, Vinton, and Scioto counties are, in our opinion, definitely *P. m. diastictus*, and since the specimens in The Ohio State Museum that were examined by Mittleman and Gier appear to us to be the same, all southeastern Ohio specimens are considered to be *diastictus*.

Pseudotriton ruber ruber Sonnini, Northern Red Salamander.—ATHENS Co. Athens (OUVC 2900); 2 mile ne of Athens (OUVC 2144); Stroud Run, Sec. 23, Canaan Twp. (OUVC 3223, 3279); Sec. 33, Canaan Twp. (OUVC 3935); Beaumont (OUVC 3177); se Sec. 10, Dover Twp. (OUVC 2544). GALLIA Co. near Rodney, Springfield Twp. (OSM 360). HOCKING Co. Neotoma (OSM 239); Clear Creek (OSM 54, 293); Cantwell Cliffs (OSM 678); Sec. 26, Goodhope Twp. (JC). JACKSON Co. White's Gulch, Liberty Twp. (OSM 673). SCIOTO Co. Roosevelt Game Preserve, Nile Twp. (OSM 201, 735); Shawnee Forest (GMD). WASHINGTON Co. Belpre Twp. (OSM 586) (fig. 9).

Aneides aeneus Cope and Packard, Green Salamander.—LAWRENCE Co. Burlington (NBG) (Gordon, 1952) (OUVC 4006-8) (fig. 6).

Eurycea bislineata rivicola Mittleman, Midwest Two-lined Salamander.—ATHENS Co. Athens (OUVC 2426) (RB 15b); 5 mile e of Athens (RB 89); Stroud Run, Canaan Twp. (RB 6); Sec. 13, Canaan Twp. (OUVC 3344); near Carbondale (RB 106); Beaumont, Dover Twp. (OUVC 2318); Troy Twp. (OSM 653); Fourmile Run, n Sec. 32, Troy Twp. (OUVC 3289-91); Sec. 31, Lodi Twp. (OUVC 2432); sw of Shade (RB 79); 3 mile n of Coolville (RB 20). GALLIA Co. nw Sec. 25, Greenfield Twp. (OUVC 3865); near Rodney, Springfield Twp. (OSM 360). HOCKING

Co. Ash Cave (OUVC 2320); Goodhope Twp. (OSM 89); sw Sec. 18, Goodhope Twp. (RB 68); Sec. 25, Goodhope Twp. (RB 2); Clear Creek (OSM 239, 197); Sec. 9, Laurel Twp. (OSM 154); Rock House (OSM A662); Cedar Falls (RB a31); Conkle's Hollow (RB 78); Sec. 27, Marion Twp. (OUVC 3201); near Haynes, Salt Creek Twp. (OSM 148); Salt Creek (OSM A645); near Blackjack, Big Pine Rd., Washington Twp. (RB 43); Cantwell Cliffs State Park (RB 17); Lake Hocking (RB 26); Logan (RB 32). JACKSON Co. Sec. 14, Liberty Twp. (OUVC 2995-96); White's Gulch, Liberty Twp. (OSM 294); Rock Run (OSM 833); Sec. 11, Hamilton Twp. (OUVC 3880). LAWRENCE Co. Sec. 14, Windsor Twp. (OUVC 3861); Sec. 18, Windsor Twp. (OUVC 3862); Manker, Sec. 2, Lawrence Twp. (OUVC 3864); Decatur Twp. (OSM 358); Burlington (OUVC 4005). MEIGS Co. 1 mile s of Pratts Fork (OUVC 2215); Salem Twp. (OSM 359);

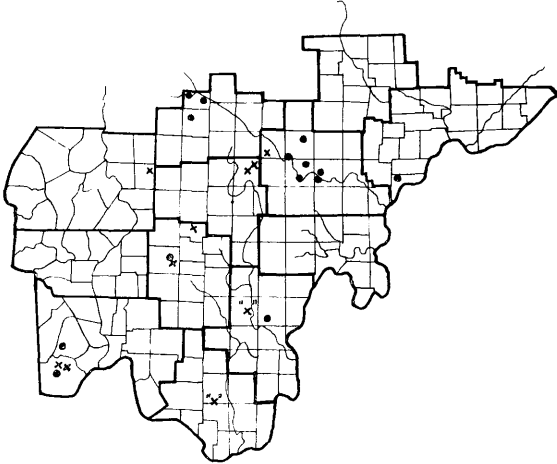


FIGURE 9. The distribution of *Pseudotriton ruber* (solid dots); *Pseudotriton montanus* (crosses).

Maloon's Run, nw Sec. 7, Salem Twp. (OUVC 3340-42); 2 mile e of Bashan (OSM 818); Sec. 35, Rutland Twp. (OUVC 3868); Sec. 12, Sutton Twp. (OUVC 3869); Long Bottom (OUVC 3226). MORGAN Co. York Twp. (OSM 864); se Sec. 17, Malta Twp. (OUVC 3351-52); Malta Twp. (OSM 398); Kill Deer, Deerfield Twp. (OSM 397). PIKE Co. Starr Hollow, w of Coopersville (OSM 597); n of Waverly (OSM 59); near Ross Co. line and US 23, Pee Pee Twp. (OSM 180); Pebble Twp. (OSM 521); nw Benton Twp. (OUVC 3441); Sec. 31, Beaver Twp. (OUVC 3881). ROSS Co. near Tucson, Harrison Twp. (OSM A487); Jimtown Hollow, Paxton Twp. (OUVC 3440); 1 mile sw of Austin (OUVC 3853); Porter Hollow Rd., s Concord Twp. (OUVC 3852); 3 mile w of Bourneville, Twin Twp. (OUVC 3854); ne Paint Twp. (OUVC 3853). SCIOTO Co. Roosevelt Lake, Shawnee S.F. (OUVC 3100) (OSM 558); sw Nile Twp. (OUVC 3884); w Brush Creek Twp. (OUVC 3887); Harrison Twp. (OSM 384); 5 mile n of Wheelersburg (OSM 449); Sec. 30, Madison Twp. (OUVC 3891). VINTON Co. Sandy Run, Sec. 10, Brown Twp. (OUVC 2522-24); Knox Twp. (OSM 280); Sec. 4, Jackson Twp. (OUVC 3817); se Sec. 8, Richland Twp. (OUVC 3819); s Sec. 7, Eagle Twp. (OUVC 3821). WASHINGTON Co. ne Sec. 3, Warren Twp. (OUVC 3295); Sec. 4, Warren Twp. (OUVC 2683); Marietta (OSM 620); Squaw Hollow (MC); Belpre Twp. (OSM 586); e Muskingum Twp. (OUVC 3354); Sec. 9, Lawrence Twp. (RB 91); Sec. 16, Ludlow Twp. (OUVC 3685); nw Sec. 13, Grandview Twp. (RB 102); Sec. 23, Dunham Twp. (OUVC 3770); Sec. 14, Watertown Twp. (OUVC 3771); Sec. 31, Wesley Twp. (OUVC 3772-73); Cutler, Fairfield Twp. (CMNH ZF1335) (fig. 10).

Insufficient comparative material from the east prevents our expressing any opinion on the validity of *rivicola* as a distinct race.

On April 12, 1957, 36 eggs were found attached to the bottom of a rock about one foot square. The rock was lying half under the water along the bank of a rock-strewn creek about

2½ miles southeast of Bainbridge, Ross Co. Several of these eggs were taken back to the laboratory, kept in pond water, and allowed to hatch. On April 24, the first eggs hatched and the larvae measured 11 mm. Other eggs were collected May 13, 1958, in a stream in Enderlin Forest, near Carbondale, Athens Co. Ten days later, they hatched.

Eurycea longicauda longicauda Green, Long-tailed Salamander.—ATHENS Co. Athens (OUVC 1553); Carbondale (OUVC 1555); Sec. 28, Canaan Twp. (OUVC 2177); Sec. 33, Canaan Twp. (OUVC 3936); Guysville (OUVC 2842); 7 mile se of Athens (OUVC 1402). GALLIA Co. Raccoon

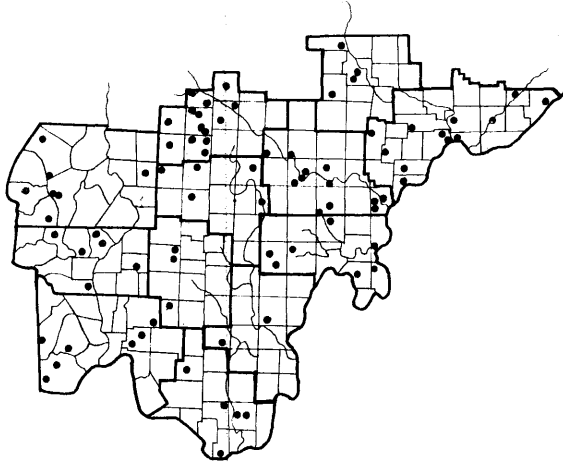


FIGURE 10. The distribution of *Eurycea bislineata*.

Creek (OSM 885). HOCKING Co. Salt Creek, Benton Twp. (OUVC 1547); Cantwell Cliffs (OSM 677, 829); Neotoma (OSM 817); Clear Creek Valley (OSM 69, 91, 239); Sec. 24, Goodhope Twp. (RB 7). JACKSON Co. Sec. 14, Liberty Twp. (OUVC 2994); White's Gulch, Liberty Twp. (OSM 673); Jackson (OUVC 1187); Lake Jackson, Jefferson Twp. (OUVC 2399); Rock Run (OSM 833); near Byer, Washington Twp. (OSM 726). LAWRENCE Co. Hecla (OSM 838). MEIGS Co. Sec. 16, Bedford Twp. (OUVC 533); 2 mile e of Bashan (OSM 818); Pomeroy (OSM 433); Forked Run State Park, Olive Twp. (OUVC 3567-68). ROSS Co. near Tucson, Harrison Twp. (OSM A487); Chillicothe (Morse, 1904). SCIOTO Co. Harrison Twp. (OSM 384); Shawnee S.F. (DMD). VINTON Co. Knox Twp. (OSM 286). WASHINGTON Co. Squaw Hollow (MC); ne Sec. 26, Ludlow Twp. (OUVC 3691) (fig. 4).

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