STATE OF OHIO
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QUATERNARY GEOLOGY OF MADISON COUNTY, OHIO

by

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MADISON COUNTY QUATERNARY GEOLOGY

Introduction

Madison County is located in central Ohio, and as of the 2020 census, the county had a population of 43,824 (U.S. Census Bureau, 2021; fig. 1). The county lies on an important transportation corridor along Interstate 70 (I-70), which centrally bisects the county. Although the county remains mostly rural, potential for growth exists as the county neighbors the state capital, Columbus. Portions of Big Darby and Little Darby Creeks that flow through Madison County are designated as both state and federal scenic rivers. Detailed mapping of the Quaternary geology is crucial for understanding the availability of natural resources for future growth within the county and to support its agricultural heritage.

Madison County is located almost entirely within the Darby Till Plain (Brockman, 1998). Much of the county is characterized by low hummocky ground moraine with several broad recessional moraines trending northwest to southeast through the county. Notable moraines in the county include the Reesville, Jeffersonville, Florence, Jonesboro, Bloomingburg, and London Moraines. A small sliver on the western edge of the county falls within the Mad River Interlobate Plain (Brockman, 1998) and is characterized by outwash terraces and interlobate moraines deposited between the Miami and Scioto Sublobes. The uppermost bedrock in the county is predominantly Silurian-age carbonates (Slucher and others, 2006). Undifferentiated Ordovician-age limestones and shales subcrop at the base of the Teays River Valley in the western portion of the county (Slucher and others, 2006; Norris and others, 2025). Minor upland exposures of Devonian-age Columbus Limestone can be found along Darby Creek along the western border of the county (Slucher and others, 2006).

Background

The Quaternary-age sediments of Madison County were first described during the earliest research into Ohio's geology, but modern, detailed mapping of these sediments had been largely neglected until this publication. One of the first descriptions of glacial sediments in the county was a notable exposure of blue clay with inclusions of wood and leaves between 25 ft (7.6 m) and 30 ft (9.1 m) deep found near London, Ohio (Whittlesey, 1869). Leverett (1902) noted the continuation of end moraines from Fayette County into Madison County in his 1902 monograph, but he stopped short of naming these landforms. In 1949, the Orleton Farms Mastodon was discovered and spurred major interest in the study of that site, leading to the publication of articles about the mastodon (Thomas, 1952), the glacial geology (Goldthwait, 1952), and associated molluscan faunas encountered during excavations (La Rocque, 1952). During the 1950s, geophysical and drilling investigations within the buried Teays Valley occurred within Madison and surrounding counties (Norris and Spicer, 1958). These investigations became primary data sources for the publication of water resources bulletins for Madison County (Norris, 1959; Halfrisch, 1994). Norris (1959) included a brief description of the water-bearing unconsolidated sediments along with a map (attributed to R. P. Goldthwait) depicting the surficial extent of some Quaternary-age sediments in the county. This mapping was compiled into the first statewide map of glacial sediments for Ohio (Goldthwait and others, 1961). A decade later, population growth prompted an investigation into the sand-and-gravel resources for the county (Couchot, 1975). Nine test wells were drilled near the London Correctional Institute and analyzed to determine the stratigraphy, texture, chemistry, and age of Quaternary sediments within the Teays Valley (Lloyd, 1998). An updated statewide (1:500,000-scale) Quaternary geology map improved the stratigraphic framework first developed in the 1950s (Pavey and others, 1999). Research into the hydraulic conductivity of fractured tills was conducted in Madison County (Fausey and others, 2000). In the 2000s, quadrangle mapping of Madison County surficial geology included the glacial landforms of the Vienna and London 7.5-minute quadrangles (Stewart, 2007) and textural-based three-dimensional stacks for the two 30 x 60-minute quadrangles that intersect Madison County (Brockman and others, 2005; Pavey and others, 2013). These surficial maps were later compiled and revised into a statewide seamless map database and published at a 1:24,000-scale (Aden and others, 2023). Finally, recent detailed county-scale Quaternary geology mapping was published in neighboring Fayette County (Valachovics and others, 2022) along with nearby Clinton (Nash, 2020) and Pickaway (Valachovics and others, 2023) Counties.

Mapping Methodology

Descriptions and interpretations of the spatial relationships between glacial sediments were made from the analysis of existing data and new field observations. Data were collected from numerous sources (see "References"). The concentration of data was greatest near the surface and decreased with depth. County soil survey maps (Gerken and Scherzinger, 1981) and previous mapping provided an initial guide to map-unit areas. These areas were modified through interpretation of local geomorphic features from a 2.5-ft x 2.5-ft (0.8-m x 0.8-m)–resolution digital elevation model (DEM) and derivative shaded relief and precent slope models. Light detection and ranging (LiDAR) data for the DEM was collected by The Ohio Statewide Imagery Program (OGRIP, 2006).

Other data that indicated deposits at depth include water well logs from the ODNR Division of Water Resources; test-boring logs provided by the Ohio Department of Transportation, Office of Geotechnical Document Management system (ODOT, 2024); and published or unpublished geologic reports and maps. These data also provided the basis for lithologic unit descriptions that summarize, as accurately as possible, geologic materials.

Preliminary mapping was cross-checked and revised from field observations. Field data were collected from a total of 109 sites, many of which were along stream banks, hand-auger borings, soil probes, and dug pits. Lithologic field descriptions included comments on texture, structure, color, contacts, and leaching.

Quaternary Geology

The surficial sediments of Madison County were deposited during the Quaternary Period (2.58 ma to present; fig. 2). Among the most significant geologic events to occur during this period are continental glaciations, in which glaciers advanced from northern spreading centers into the mid-latitudes. At least three glaciations affected Madison County during the Pleistocene Epoch (2.58 ma–11.7 ka). There is no surficial sediment record of the earliest pre-Illinoian (Marine Isotope Stage [MIS] >191) or Illinoian (MIS 6) glaciations in Madison County, although some pre-Illinoian clay or lacustrine sediments have been reported at the base of the buried Teays River Valley (Norris and Spicer, 1958; Lloyd, 1998). Sediments deposited during the last glaciation, called the Wisconsin Episode or Wisconsin Glaciation (MIS 2), either buried or eroded these earlier glacial deposits. Most of the surficial sediments in Madison County were deposited during the Wisconsin Glaciation. These glacial sediments originate from the Scioto Sublobe of the Laurentide Ice Sheet (fig. 1).

The Scioto Sublobe advanced through Madison County to its terminal position about 45 km (28 mi) southwest, which is marked by the development of the Cuba Moraine around 27,000 to 24,000 years ago (Nash, 2020). Glacial till associated with this advance (Caesar Till) is absent on the surface of Madison County but are exposed in adjacent counties (Nash, 2020; Valachovics and others, 2023). Caesar Till deposits are found in the subsurface buried valleys of Madison County where more complete Quaternary sediment records are preserved (Lloyd, 1998). The maximum age for this glacial advance in Madison County comes from a radiocarbon-dated wood sample collected from core at the London Correctional Institute (Lloyd, 1998). The wood, with a calibrated median age of 32,565 cal yr BP (table 1), was positioned in sand and gravel stratigraphically beneath the Caesar Till (Lloyd, 1998).

The Scioto Sublobe began to retreat shortly after it reached its Last Glacial Maximum (LGM) position. A series of recessional moraines were constructed during this post-LGM retreat. The Jonesboro Moraine and the Florence Moraine developed shortly after 24,000 years ago as the Scioto Sublobe retreated out of southern Madison County to an unknown point. Other recessional moraines, such as the Glendon Moraine and New Holland Moraine, were constructed during this initial retreat of the Scioto Sublobe but are preserved only in adjacent counties (Valachovics and others, 2022, 2023). These recessional moraines became palimpsest features when the Scioto Sublobe readvanced again about 22,000 years ago.

A slightly different glacial till lithology was deposited as the Scioto Sublobe advanced over Madison County for a second time during the Wisconsin Glaciation. The surficial till found behind the Reesville Moraine is called the Darby Till, which gets its name from major rivers in the area. The Darby Till is found in both the ground moraine (**dag**) and end moraine (**dame**) landforms that cover the majority of Madison County. The Reesville Moraine marks the furthest advance of ice 22,000 years ago and is composed of Darby Till (Nash, 2020; Valachovics and others, 2022). The Jeffersonville Moraine, Bloomingburg Moraine, and London Moraine were constructed as the Scioto Sublobe retreated from the Reesville Moraine. The recession of the Scioto Sublobe in Madison County is constrained by minimum ages from bog bottom dates with median ages of 19,365 cal yr BP and 18,850 cal yr BP (Glover and others, 2011) and a maximum age of approximately 22,495 cal yr BP from plant material in a paleosol beneath the Darby Till in adjacent Fayette County (Valachovics and others, 2022).

Glacial meltwater flowed across Madison County as the Scioto Sublobe retreated from its maximum readvance position at the Reesville Moraine. This meltwater both scoured erosional channels into moraine landforms and deposited glaciofluvial outwash into larger dendritic valley systems. Terraces of Worthington Outwash (**gfow**) are preserved within modern river valleys in the county and are typically 3–6 m (10–20 ft) above the modern floodplain. Broad, low-relief plains of Worthington Outwash formed concurrently with the Bloomingburg Moraine. These outwash plains formed as meltwater flowed across the flat, recently deglaciated ground moraine and eventually drained into the headwaters of Paint Creek and Walnut Run (a tributary to Deer Creek). Lacustrine sediment (**gll**) on the Jeffersonville Moraine was deposited where meltwater was confined to a small basin near the village of South Solon. Subglacial meltwater also contributed to the development of kame (**k**) features, which are primarily concentrated in Madison County between the Bloomingburg and London Moraines along Deer Creek.

Some surficial sediments in Madison County were deposited during the Holocene Epoch (11.7 ka–present, fig. 2), primarily by alluvial processes. Modern rivers like Big Darby Creek, Little Darby Creek, Paint Creek, and Deer Creek flow through Madison County. These rivers were established first as meltwater pathways during glaciation, but in the modern post-glacial period, these streams have incised through glacial deposits to cut lower elevation channels that isolate glacial outwash terrace landforms.

The modern alluvium (**al**) found within channels and deposited on floodplains is mainly sourced from eroded glacial deposits. The lithology of alluvium deposits closely resembles the coarse sediment faction of observed glacial till exposures along the bank of modern channels. Igneous and metamorphic pebbles of glacial erratic origin are reworked and deposited by modern rivers. This process can round glacial erratics during transport in the fluvial system, whereas glacial erratics plucked directly from exposures of glacial till range from sub-rounded to angular. Alluvial deposits are also composed of local bedrock lithologies, especially in areas where glacial sediments are thin.

Isolated low hummocks on the recently deglaciated landscape allowed for the accumulation of minor peat (**peat**) deposits through the post-glacial Late Pleistocene and into the Holocene Epoch. These peat deposits could have been small kettle lakes immediately following glaciation, but a warming climate and the accumulation of organic material filled these basins as they transitioned from small lakes into a wetland ecosystem. Significant fossil megafauna finds have been documented for Madison County within these peat deposits (Thomas, 1952).

Human modification of the landscape, including the construction of mines, quarries, dams, and other made lands, are also delineated on this map. The mines (**pit**) located in Madison County typically dredge water-filled pits for sand-and-gravel from glacial outwash terraces or modern river valleys. Dams constructed in modern valleys and upland hummocks pool water (**w**) as a source of potable water and for recreation. Various other made lands (**m**) created through urban and suburban development are formed using artificial fill. These anthropogenic units are mapped, as they obfuscate the original glacial and post-glacial natural landforms that existed before human intervention.

EXPLANATION OF MAP SYMBOLS

- Field data collection locality
- Radiocarbon sample
- Pit
- Meltwater scar
- Moraine crest
- Fluting
- Kettle depression
- A–A' Cross section

Transportation Classification

- Interstate
- U.S. Route
- State Route
- County, township, or municipal road
- Railroad (single track)
- Ohio-to-Erie Trail (converted rail)

Political Boundaries

- County border
- Township border

Hydrographic Features

- Perennial river, stream, or creek
- Intermittent river, stream, creek, or wash
- Canal or ditch

DESCRIPTION OF MAP UNITS

Pit—Pit bottom generally underlain by unconsolidated lithologic units of surrounding polygon(s). May contain reclaimed areas.

Made land—Heavily modified and terraformed areas.

Water—Lakes generally larger than 20 acres.

Holocene-Pleistocene

Peat (Holocene-Pleistocene)—Substantial deposits of herbaceous organic material found in wetlands. May include minor amounts of sand, silt, clay, organic muck, and marl.

Alluvium (Holocene–Pleistocene)—Varying facies of silt, sand, and gravel found along floodplains, channels, and bars associated with modern river systems that began developing after deglaciation. Includes patchy alluvial deposits where streams may have eroded to bedrock or cohesive Pleistocene deposits.

Pleistocene

Darby Till Ground Moraine (Wisconsinan)—Silt loam, dark gray, pebbly diamicton associated with the ground moraines northeast of the Reesville End Moraine. Typically 0–30 centimeters (cm) (0–12 inches [in]) of loess cover. Includes lenses of sand and gravel interbedded within the till. Includes both ablation till units and lodgment till units. Contact between ablation till and lodgment till can be recognized in well logs by the term "hardpan" found at depths typically between 4.5 and 9 m (15 and 30 ft).

Darby Till End Moraine (Wisconsinan)—Silt loam, dark gray, pebbly diamicton associated with the Reesville, Jeffersonville, Jonesboro, Bloomingburg, and London End Moraines. Some moraines show geomorphic evidence of being overrun due to a readvance or ice reorientation and may be palimpsest features. Typically 0–30 cm (0–12 in) of loess cover. Includes lenses of sand and gravel interbedded within the till. Contact between ablation till and lodgment till can be recognized in well logs by the term "hardpan" found at depths typically between 4.5 and 9 m (15 and 30 ft).

Caesar Till (Wisconsinan)—Silt loam, blue-gray, pebbly diamicton associated with the 27 ka glacial advance and subsequent retreat. Typically capped with 100–150 cm (40–60 in) of loess in surficial deposits. Includes lenses of sand and gravel interbedded within the till. Visible in cross section only.

Kames (Wisconsinan)—Poorly sorted sand and gravel deposits formed as groups of high hummocks directly in contact with wasting ice.

Worthington Outwash (Wisconsinan)—Stratified sand and gravel deposited during glacial retreat following the Reesville Readvance (22 ka). Valley heads at the Powell Moraine (Delaware County) and associated 18 ka glacial advance. Unit is contemporaneous with the Darby Till. Deposits located in meltwater channels, on outwash plains abutting end moraines, or isolated above modern flood plains on terraces. May be discontinuous to patchy where thin.

Intermorainal lake deposits (Wisconsinan)—Glacial lacustrine silt and clays deposited in temporary meltwater lakes formed in hummocks and basins within former meltwater channels and moraines. Basins may be open where previously dammed by ice or material removed during overtopping of meltwater.

Undifferentiated till (Pleistocene)—Till of unknown age recorded on deep borings completed in bedrock valleys and not associated with any surface exposures. May include interbedded lacustrine or glaciofluvial outwash deposits. Visible in cross section only.

Glacial fluvial outwash (Pleistocene)—Undifferentiated sand and gravel of unknown age. Recorded on deep borings and not associated with any surface exposures. Visible in cross section only.

Circleville Outwash (Wisconsinan)—Stratified sand and gravel deposited during glacial retreat from the Last Glacial Maximum (27 ka). Unit is contemporaneous with Caesar Till. Visible in cross section only.

Silurian–Ordovician

Undifferentiated bedrock (Silurian–Ordovician)—Primarily dolostone and limestone with minor interbedded shales in deep buried valleys. Visible in cross section only.

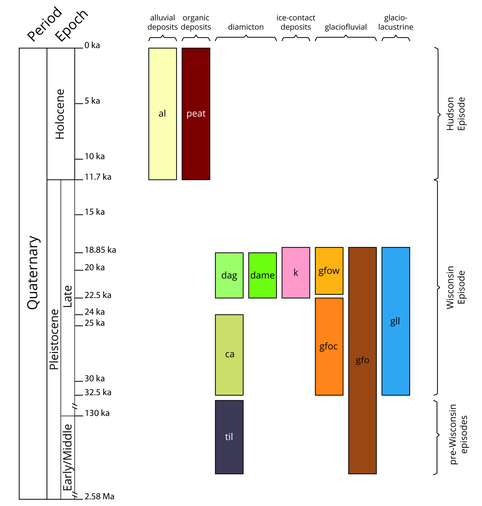


FIGURE 2. Correlation of unconsolidated map units. Units **ca**, **til**, **gfo**, and **gfoc** are found in cross section only. See "Description of Map Units" for a full explanation of each unit.

Location of Madison County in Ohio

FIGURE 1. Last Glacial Maximum (LGM) sublobe map of Ohio showing location of Madison County (in red).

TABLE 1. *Radiocarbon samples from Madison County (modified from Higley and Norris, 2020).*

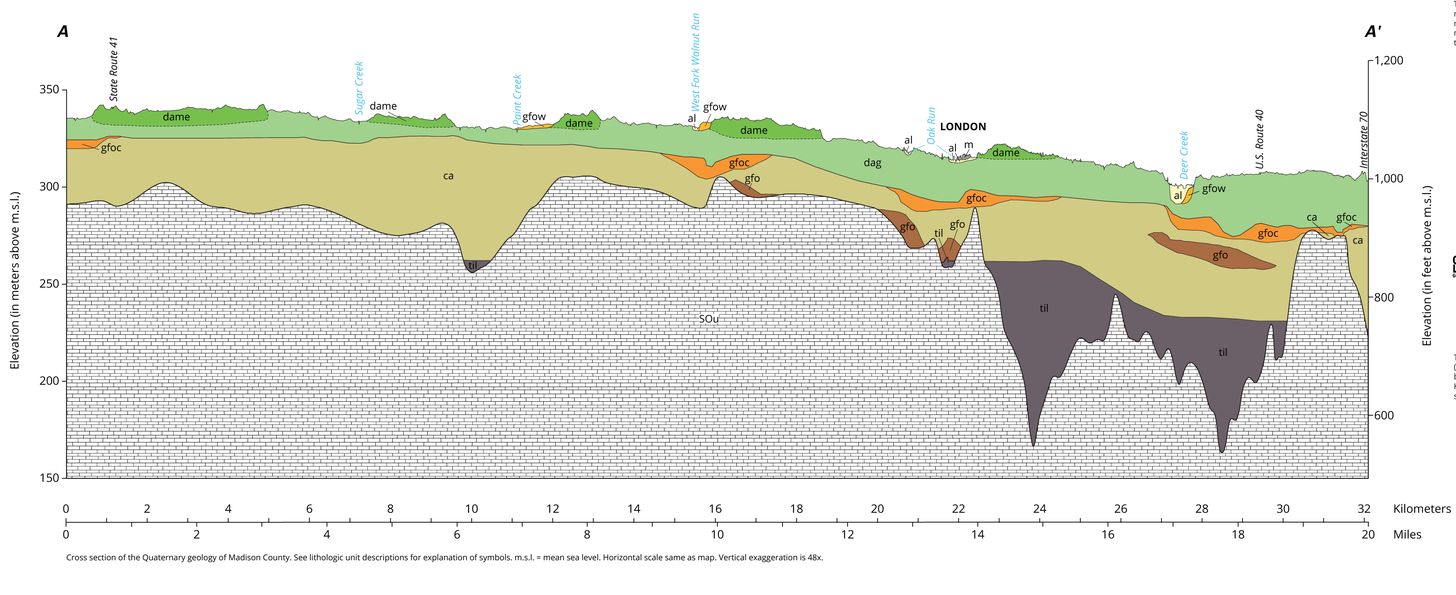
ID	Site	Material	Depth (m)	^{14}C age (BP)	Calibrated Age (Median Probability, BP)[1]	Latitude	Longitude	Notes
Beta-190863[1]	Mastodon II	Plant macrofossils	—	16,050 ± 90	19,365	40.011900	-83.452900	Minimum age
ETH-28523[1]	Tile Site	Plant macrofossils	>3.6	15,560 ± 100	18,850	40.033200	-83.483500	Minimum age
ISGS-3224[2]	London Correctional Institute	Wood	74.7	28,390 ± 330	32,565	39.905777	-83.481339	Within sand and gravel, beneath till

[1] All ages calibrated using IntCal20 calibration curves (Reimer and others, 2020). Calibrated age shows 2σ median age in calendar years before present (BP).
[1] Glover and others, 2011.
[2] Lloyd, 1998.

Basemap derived from various State of Ohio datasets
Projection is Ohio State Plane Feet coordinate system, south zone
North American Datum 1983

APPROXIMATE MEAN DECLINATION, 2025

SCALE: 1:62,500



Cross section of the Quaternary geology of Madison County. See lithologic unit descriptions for explanation of symbols. m.s.l. = mean sea level. Horizontal scale same as map. Vertical exaggeration is 48x.

REFERENCES

Aden, D.J., Nash, T.A., and Stucker, J.D., 2023, Guide to the Surficial Stack Database of Ohio—Mapping and revisions, 1997–2022: Columbus, Ohio Department of Natural Resources, Division of Geological Survey Open-File Report 2023-1, 44 p.

Brockman, C.S., 1998, Physiographic regions of Ohio: Columbus, Ohio Department of Natural Resources, Division of Geological Survey, page-size map with text, 2 p., scale 1:2,100,000.

Brockman, C.S., Schumacher, G.A., Shrake, D.L., Swinford, E.M., and Larsen, G.E., 2005, Surficial geology of the Springfield 30 X 60-minute quadrangle: Columbus, Ohio Department of Natural Resources, Division of Geological Survey Map SG-2 Springfield, scale 1:100,000.

Couchot, M.L., 1975, Sand and gravel resources of Madison County, Ohio: Columbus, Ohio Department of Natural Resources, Division of Geological Survey Geological Note No. 2, scale 1:62,500.

Fausey, N.R., Hall, G.F., Bigham, J.M., Alfred, B.J., and Christy, A.D., 2000, Properties of the fractured glacial till at the Madison County, Ohio, field workshop pit site: Ohio Journal of Science, v. 100, no. 3, p. 107–112.

Gerken, J.C., and Scherzinger, R.J., 1981, Soil survey of Madison County, Ohio: U.S. Department of Agriculture, National Cooperative Soil Survey, 106 p.

Glover, K.C., Lowell, T.V., Wiles, G.C., Pair, D., Applegate, P., and Hajdas, I., 2011, Deglaciation, basin formation and post-glacial climate change from a regional network of sediment core sites in Ohio and eastern Indiana: Quaternary Research, v. 76, p. 401–410.

Goldthwait, R.P., 1952, Geological situation of the Orleton Farms Mastodon: Ohio Journal of Science, v. 52, no. 1, p. 5–9.

Goldthwait, R.P., White, G.W., and Forsyth, J.L., 1961, Glacial map of Ohio: Washington, D.C., U.S. Geological Survey, Department of the Interior, Miscellaneous Geologic Investigations, Map I-316, scale 1:500,000.

Hallfrisch, M.P., 1994, Ground water resources of Madison County: Columbus, Ohio Department of Natural Resources, Division of Water Groundwater Resources Map 79, scale 1:62,500.

Higley, M.C., and Norris, T.A., 2020, Ohio radiocarbon report—Radiocarbon ages from Ohio surficial material: Columbus, Ohio Department of Natural Resources, Division of Geological Survey Open-File Report 2020-1, 28 p.

La Rocque, A, 1952, Molluscan faunas of the Orleton Mastodon Site, Madison County, Ohio: Ohio Journal of Science, v. 52, no. 1, p. 10–27 .

Leverett, F, 1902, Glacial formations and drainage features of the Erie and Ohio basins: Washington, D.C., U.S. Geological Survey Monograph, v. 41, 802 p.

Lloyd, B.A., 1998, Stratigraphy of Late Wisconsin tills from the London Correctional Institute, Union Township, Madison County, Ohio: Akron, Ohio, The University of Akron, M.S. Thesis, 159 p.

Nash, T.A., 2020, Quaternary geology of Clinton County, Ohio: Columbus, Ohio Department of Natural Resources, Division of Geological Survey Open-File Report 2019-1, 27 p., 1 pl.

Norris, S.E., 1959, The water resources of Madison County, Ohio: Columbus, Ohio Department of Natural Resources, Division of Water Bulletin 33, 63 p., 1 pl.

Norris, S.E., and Spicer, H.C., 1958, Geological and geophysical study of the preglacial Teays Valley in west-central Ohio, *in* Contributions to the Hydrology of the United States 1956–1959: Washington, D.C., U.S. Geological Survey, Water Supply Paper 1460-E, 435 p.

Norris, T.A., Valachovics, T.R., Parrick, B.D., and Nash, T.A., 2025, Bedrock topography of Madison County, Ohio: Columbus, Ohio Department of Natural Resources, Division of Geological Survey, Map BG-4C-MAD, Scale 1:62,500.

Ohio Department of Transportation (ODOT), 2024, Transportation Information Mapping System (TIMS): Columbus, Ohio Department of Transportation, last accessed April 19, 2024, at <https://gis.dot.state.oh.us/tims> .

Ohio Geographically Referenced Information Program (OGRIP), 2006, Ohio Statewide Imagery Program: Ohio Office of Information Technology, Statewide Imagery Program, last accessed April 19, 2024, at <https://gis1.oit.ohio.gov/geodatadownload/>.

Pavey, R.R., Aden, D.J., Fugitt, F.L., Jones, D.M., and Angle, M.P., 2013, Surficial geology of the Bellefontaine 30 x 60-minute quadrangle: Columbus, Ohio Department of Natural Resources, Division of Geological Survey Map SG-2-BEL, scale 1:100,000.

Pavey, R.R., Goldthwait, R.P., Brockman, C.S., Hull, D.N., Swinford, E.M., and Van Horn, R.G., 1999, Quaternary geology of Ohio: Columbus, Ohio Department of Natural Resources, Division of Geological Survey Map No. 2, scale 1:500,000.

Reimer, P.J., Austin, W.E.N., Bard, Edouard, Bayliss, Alex, Blackwell, P.G., Bronk Ramsey, Christopher, Butzin, Martin, Cheng, Hai, Edwards, R.L., Friedrich, Michael, Grootes, P.M., Guilderson, T.P., Hajdas, Irka, Heaton, T.J., Hogg, A.G., Hugen, K.A., Kromer, Bernd, Manning, S.W., Muscher, Raimund, Palmer, J.G., Pearson, Charlotte, van der Plicht, James, Reimer, R.W., Richards, D.A., Scott, E.M., Southon, J.R., Turney, C.S.M., Wacker, Lukas, Adolfsjri, Florian, Büntgen, Ulf, Copano, Manuela, Fahrni, S.M., Fogtmann- Schulz, Alexandra, Friedrich, Ronny, Köher, Peter, Kudsk, Sabrina, Miyake, Fusa, Olsen, Jesper, Reinig, Frederick, Sakamoto, Minoru, Sookdeo, Adam, and Talamo, Sahra, 2020, The IntCal20 Northern Hemisphere Radiocarbon Age Calibration Curve (0–55 cal kBP): Radiocarbon, v. 62, no. 4, p. 725–757.

Slucher, E.R., Swinford, E.M., Larsen, G.E., Schumacher, G.A., Shrake, D.L., Rice, C.L., Caudill, M.R., Rea, R.G., and Powers D.M., 2006, Bedrock geologic map of Ohio: Columbus, Ohio Department of Natural Resources, Division of Geological Survey Map BG-1, scale 1:500,000.

Stewart, A.K., 2007, Imprint of continental-glacier erosion over space and time: three examples from Ohio, USA: Cincinnati, Ohio, The University of Cincinnati, Ph.D. Dissertation, 111 p.

Thomas, E.S., 1952, The Orleton Farms mastodon: Ohio Journal of Science, v. 52, no. 1, p. 1–9.

U.S. Census Bureau, 2021, 2020 Census Redistricting Data (Public Law 94-171) Summary File: U.S. Department of Commerce, last accessed May 10, 2024, at <https://www.census.gov/library/visualizations/interactive/2020-population-and-housing-state-data.html>.

Valachovics, T.R., Nash, T.A., and Norris, T.A., 2022, Quaternary geology of Fayette County, Ohio: Columbus, Ohio Department of Natural Resources, Division of Geological Survey Map QG-2-FAY, scale 1:62,500.

Valachovics, T.R., Norris, T.A., and Nash, T.A., 2023, Quaternary geology of Pickaway County, Ohio: Columbus, Ohio Department of Natural Resources, Division of Geological Survey Map QG-2-PIC, scale 1:62,500.

Whittlesey, C., 1869, Contributions to the geology of Ohio: Cleveland, Ohio, Cleveland, Fairbanks, Benedict & Co., 48 p.

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