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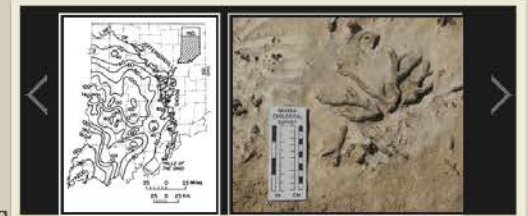
MUSCATATUCK GROUP

Age:

Devonian

Type designation:

Type section: The Muscatatuck Group was named for its many exposures along the forks and tributaries of the Muscatatuck River, particularly in Jefferson and Jennings Counties, southeastern Indiana (Shaver, 1974, p. 3-6) (Droste and Shaver, 1986). The type section is an exposure along the north bluff of Big Camp Creek, Jefferson County (NE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 13, T. 4 N., R. 8 E.), there embracing the Jeffersonville and North Vernon Limestones (Droste and Shaver, 1986).



Reference sections: Three reference sections were designated, including two in northern Indiana, where the group consists of the Detroit River Formation below and the Traverse Formation above (Shaver, 1974). The following descriptions of the reference sections are from Shaver (1974).

- (1) Section cored in the A. R. Thompson Roy Randall no. 1-D well, NE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 26, T. 19 N., R. 2 W., Boone County, Indiana. [Elevation, 909 ft (277.1 m). Cores from this well are in the Indiana Geological Survey Core Library (file 100).]
- (2) Section both exposed in the Woodburn Quarry of May Stone and Sand, Inc., Allen County, and cored in the Indiana Geological Survey drill hole 188 (file 452), NW $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 23, T. 31 N., R. 14 E., Allen County, Indiana. [Elevation, 743 ft (226.5 m).]
- (3) Section cored in the Indiana Geological Survey drill hole 168 (file 410), SE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 14, T. 33 N., R. 4 W., LaPorte County, Indiana. [Elevation, 670 ft (204.2 m).]

History of usage:

Shaver (1974) proposed the name "Muscatatuck Group" to include in Indiana all the so-called Middle Devonian carbonate rocks or the Middle Devonian limestone (Limestone) of common usage that lie stratigraphically between the New Harmony Group (Lower Devonian) and the Devonian black shale units above (Droste and Shaver, 1986).

Description:

Several kinds of carbonate and evaporite lithologies make up the Muscatatuck Group (Droste and Shaver, 1986). The most common are: (1) drab-colored fine-grained sandy dolostone or dolomitic quartz sandstone, which is generally found lowest in the group but in other positions in some places; (2) brown granular vuggy dolostone, concentrated in, but not confined to, the Geneva and Milan Center Dolomite Members; (3) light-colored to dark limestones that are shaly to pure and granular and conspicuously fossiliferous and that exhibit features generally ascribed to normal-marine depositional regimes, these rocks typifying parts of the Jeffersonville Limestone and much of the North Vernon Limestone and the Traverse Formation; (4) variously colored dense, including lithographic, to fine-grained, commonly laminated dolostones and dolomitic limestones that exhibit other sedimentary features generally ascribed to penesaline or hypersaline depositional regimes and that especially typify parts of the Jeffersonville Limestone and much of the Detroit River Formation; and (5) white to pale-blue cryptocrystalline to coarsely granular and fibrous anhydrite and gypsum, which are found in lower and upper Detroit River rocks (Droste and Shaver, 1986).

Distribution: The Muscatatuck has two principal areas of exposure in Indiana flanking either side of the Cincinnati and Kankakee Arches; the rest of its distribution is subsurface in the Illinois and Michigan Basins (Droste and Shaver, 1986). The thickness, therefore, ranges from an erosional zero to more than 250 ft (76.2 m) in each of the basins (Shaver, 1974, fig. 1) (Droste and Shaver, 1986). (See also Lazor, 1971; Shaver and others, 1971; Becker, 1974; Droste and Shaver, 1975; and Doheny, Droste, and Shaver, 1975.)

Boundaries:

In a few southwesternmost Indiana counties in the deeper part of the Illinois Basin, the Muscatatuck overlies carbonate rocks of the New Harmony Group (Lower Devonian) conformably (Droste and Shaver, 1986). Elsewhere the Muscatatuck has mostly an overlapping, truncating relationship with Silurian rocks that range stratigraphically downward from the youngest rocks in the Salina Group (Wabash Formation) to within the Salamonie Dolomite (middle Niagaran) (Droste and Shaver, 1986). The magnitude of truncation increases in a southeasterly direction (Droste and Shaver, 1986).

Except where affected by post-Devonian erosion, the Muscatatuck is overlain by the dark shales of the New Albany Shale (southern Indiana) and of the Antrim Shale (northern Indiana) (Droste and Shaver, 1986). In places the contact is conformable, but the absence of a part or the whole of the lower black shale member from some places denotes modest unconformity for those places (Droste and Shaver, 1986).

Correlations:

The Muscatatuck Group is mostly Middle Devonian in age (Erian, North American standard; Eifelian and Givetian, global standard) as shown by different groups of index fossils and as keyed in part by the relationships of the Tioga Bentonite Bed (Droste and Shaver, 1986). The lowest part of the Muscatatuck is very likely Early Devonian (Emsian, global standard Ulsterian, North American standard) (Droste and Shaver, 1986).

Foremost among the index fossils are the name given to several conodont zones that have been described by Orr (1964, 1969, 1971), Orr and Pollock (1968), Shaver and others (1971), Droste and Orr (1974), and Sparling (1983), among others (Droste and Shaver, 1986). Other zonal indices include especially the brachiopods and corals that define the oft-cited biostratigraphic zones at the Falls of the Ohio. (See Perkins, 1963; Stumm, 1964; Boucot and Johnson, 1968; Powell, 1970; Oliver, 1976; and Conkin and Conkin, 1980) (Droste and Shaver, 1986). The lowest Muscatatuck rocks in basinal positions are possibly late Early Devonian in age (Droste and Shaver, 1986).

The closest correlatives of the Muscatatuck Group are: the Grand Tower Limestone and the Lingle Formation, Illinois; the Detroit River and Traverse Groups, Michigan Basin; most of the Detroit River Group through the Silica Formation and the Ten Mile Creek Dolomite, northwestern Ohio; equivalent rocks including the Columbus and Delaware Limestones, central Ohio; and the Jeffersonville and Sellersburg Limestones, western Kentucky (Droste and Shaver, 1986).

Regional Indiana usage:**Illinois Basin (COSUNA 11)**

Supergroup: *none*

Group: *Muscatatuck Group*

Illinois Basin Margin (COSUNA 12)

Supergroup: *none*

Group: *Muscatatuck Group*

Cincinnati Arch (COSUNA 13)

Supergroup: *none*

Group: *Muscatatuck Group*

Kankakee Arch (COSUNA 14)

Supergroup: *none*

Group: *Muscatatuck Group*

Michigan Basin (COSUNA 15)

Supergroup: *none*

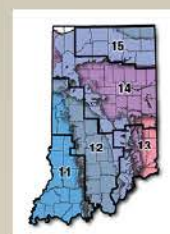
Group: *Muscatatuck Group*

Misc/Abandoned Names:

None

COSUNA areas and regional terminology

Names for geologic units vary across Indiana. The Midwestern Basin and Arches Region COSUNA chart (Shaver, 1984) was developed to strategically document such variations in terminology. The geologic map (below left) is derived from this chart and provides an index to the five defined COSUNA regions in Indiana. The regions are generally based on regional bedrock outcrop patterns and major structural features in Indiana. (Click the maps below to view more detailed maps of COSUNA regions and major structural features in Indiana.)



COSUNA areas and numbers that approximate regional bedrock outcrop patterns and major structural features in Indiana.



Major tectonic features that affect bedrock geology in Indiana.

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