Summary of Indiana Geology

John R. Hill
Associate Director
and Geologist

Indiana University
Indiana Geological Survey
Map illustrating plate boundaries and tectonic movement

Explanation

- Yellow: Direction of plate motion
- Red: Ridge axis
- Black: Transform fault
- Dotted-dashed: Subduction zone
- Blue: Uncertain plate boundary
- Red: Area of deep-focus earthquakes
Igneous Rocks
Volcanic eruption (Iceland)
Devils Tower
Wyoming
Metamorphic Rocks
Kink banding in metamorphic rock
Diagram showing major depositional basins for sediment accumulation.
Sedimentary Rocks
Pre-erosional surface

Periods
- Pennsylvanian
- Mississippian
- Devonian
- Silurian
- Ordovician
- Cambrian
- Precambrian
Jointed limestone bedrock
Joints enlarged by solution
Sinkholes of the Mitchell Plain
Stream in cave passage
Tight cave passage
Sediment sorting by running water
Shale bedrock (shale weathers in part by *slaking*).
Ripple marks and cross-bedding in sand dune complex
Sandstone bedrock with preserved cross-bedding
Evaporite deposits (white deposits)
<table>
<thead>
<tr>
<th>PRECAMBRIAN ERAS</th>
<th>PERIOD</th>
<th>MILLIONS OF YEARS AGO</th>
<th>ROCK TYPES IN INDIANA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRECAMBRIAN</td>
<td>4.6 BILLION</td>
<td>Granite, marble, gneiss, and other igneous and metamorphic rock types</td>
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<tr>
<td></td>
<td>CAMBRIAN</td>
<td>540 MILLION</td>
<td>Sandstone and dolomite</td>
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<tr>
<td></td>
<td>ORDOVICIAN</td>
<td>500 MILLION</td>
<td>Limestone, dolomite and sandstone</td>
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<td></td>
<td>SILURIAN</td>
<td>435 MILLION</td>
<td>Dolomite, limestone, siltstone, and shale deposited in regionally extensive reef platform (the Fort Wayne Bank)</td>
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<td>DEVONIAN</td>
<td>410 MILLION</td>
<td>Upper part: carbonate shale</td>
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<tr>
<td></td>
<td>MISSISSIPPIAN</td>
<td>355 MILLION</td>
<td>Shale, mudstone, sandstone, limestone, and gypsum. Extensive deposits in northeastern Indiana, north and west of Allen County</td>
</tr>
<tr>
<td></td>
<td>PENNSYLVANIAN</td>
<td>325 MILLION</td>
<td>Shale, sandstone, mudstone, clay, coal, limestone, and conglomerate. Not present in northeastern Indiana, but extensive in nearby parts of Michigan</td>
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<tr>
<td></td>
<td>PERMIAN</td>
<td>295 MILLION</td>
<td>No widespread deposits in Indiana</td>
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<tr>
<td></td>
<td>TRIASSIC</td>
<td>250 MILLION</td>
<td></td>
</tr>
<tr>
<td></td>
<td>JURASSIC</td>
<td>203 MILLION</td>
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</tr>
<tr>
<td></td>
<td>CRETACEOUS</td>
<td>135 MILLION</td>
<td></td>
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<tr>
<td></td>
<td>QUATERNARY (PLEISTOCENE EPOCH)</td>
<td>1.8 MILLION</td>
<td>Glacial till, sand, gravel, silt, marl, clay, and peat deposited during and after continental glaciation</td>
</tr>
<tr>
<td></td>
<td>TERTIARY</td>
<td>65 MILLION</td>
<td>0-35 ft</td>
</tr>
<tr>
<td></td>
<td>CENOZOIC</td>
<td></td>
<td>0-400 ft</td>
</tr>
</tbody>
</table>

**Geologic Time**
The Ice Age
Glacial till (five events represented in this exposure)
Striated Boulder (striae were cut by more recent ice advance)
Braided outwash plain (Red Glacier, Alaska)
Valley train outwash sand and gravel
Pinhook Bog (LaPorte County, Indiana)
Pitcher plant
(Pinhook Bog, LaPorte Co., Indiana)
Map of northwestern Indiana, Lake Rim district

EXPLANATION
- Lake deposits and dune sand
- Glacial till as ground and end moraine
- Mostly outwash plain
- Glacial sluiceway and alluvium

Cook Co.
- CHICAGO
- TOLESTON SHORELINE
- GLACIAL
- LAKE
- GARY
- GLENWOOD SHORELINE
- CHICAGO
- TINLEY MORaine
- CROWN POINT
- VALPARAISO
- KANKAKEE

Will Co.
- Lake Co.
- Porter Co.
- Laporte Co.

ILL.  IND.
Quaternary Deposits

EXPLANATION

a,b Wisconsin glacial till

c,d Pre-Wisconsin till

e Wind-blown silt

f Glacial lakes

g Sand and gravel of glacial river origin
Bedrock Geologic Map

EXPLANATION
- **Pennsylvanian**
- **Mississippian**
- **Mississippian-Devonian**
- **Devonian**
- **Silurian**
- **Ordovician**
View of Knobstone Escarpment from Weedpatch Hill (Brown County State Park)
Small bedrock stream valley filled with glacial till
Tipton Till Plain
For Further Information Please Contact:

Indiana Geological and Water Survey
611 North Walnut Grove
Bloomington, IN  47405

IGWS.Indiana.edu
E-mail: IGSinfo@indiana.edu

812-855-7636
References

[1] Composite derived from various sources.


