

LANDSCAPES OF WISCONSIN

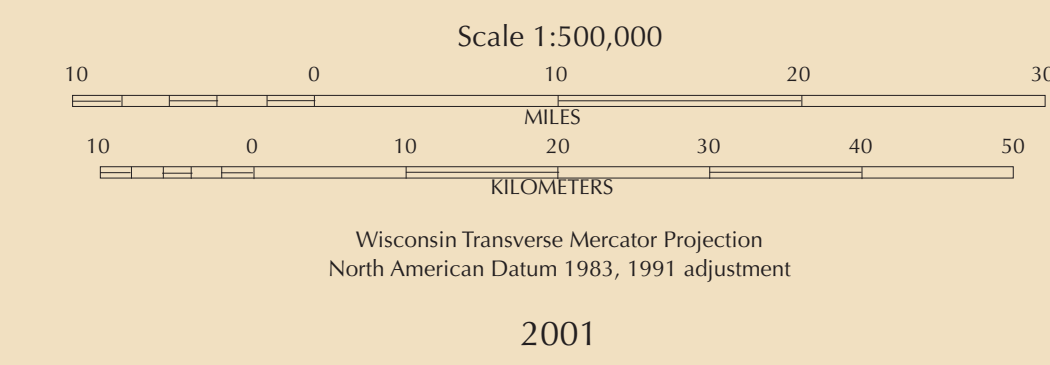
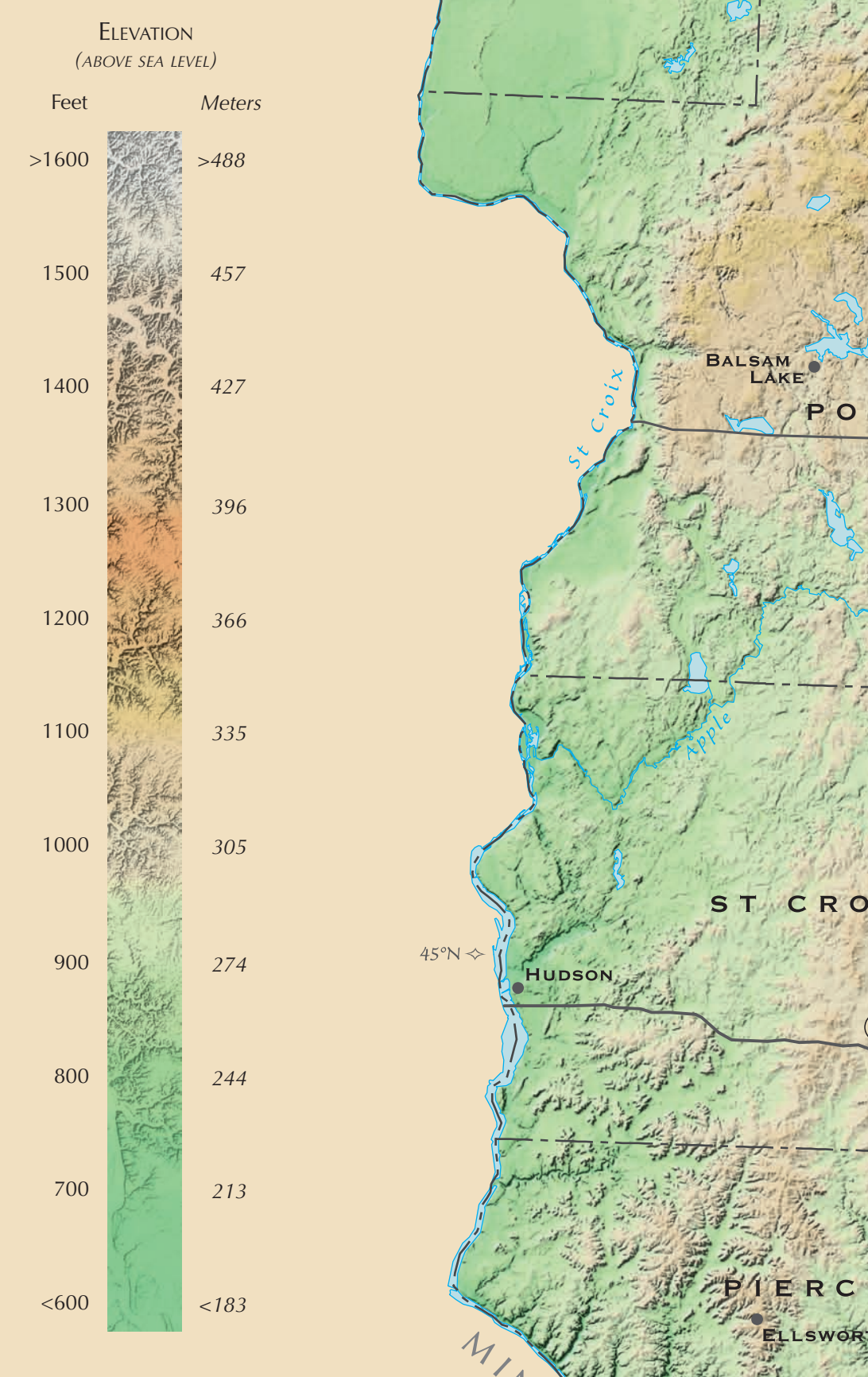


Figure 1. Major landscape regions and extent of glaciation in Wisconsin. The most recent ice sheet, the Laurentide, was centered in northern Canada and stretched eastward to the Atlantic Ocean, north to the Arctic Ocean, west to Montana, and southward into the upper Midwest. Six lobes of the Laurentide Ice Sheet entered Wisconsin.

PERHAPS IT TAKES A PRACTICED EYE to appreciate the landscapes of Wisconsin. To some, Wisconsin landscapes lack drama—there are no sky-scraping mountains, no monumental canyons. But to others, drama lies in the more subtle beauty of prairie and savanna, of rocky hillsides and rolling agricultural fields, of hillsides and hollows.

The origin of these contrasting landscapes can be traced back to their geologic heritage. Wisconsin can be divided into three major regions on the basis of this heritage (fig. 1). The first region, the Driftless Area, appears never to have been overtaken by glaciers and represents one of the most rugged landscapes in the state. This region, in southwestern Wisconsin, contains a well-developed drainage network of stream valleys and ridges that form branching, tree-like patterns on the map. A second region—the northern and eastern parts of the state—was most recently glaciated by lobes of the Laurentide Ice Sheet, which reached its maximum extent about 20,000 years ago. Windy hills, ridges, plains, and lakes characterize this region. A third region lies between the central to western and south-central parts of the state that were glaciated during advances of earlier ice sheets. This region has a subdued, rolling landscape.

The text below focuses on twelve of the many landscape features of Wisconsin; they are shown by number on the index map (fig. 2) to aid you in finding them on the large image of the state.



PROMINENT LANDSCAPE FEATURES OF WISCONSIN

- 1. GOGEBIC AND TRAP RANGES**
The Gogebic and Trap Ranges form two conspicuous ridges in Iron and Ashland counties in northern Wisconsin. Both ridges are composed of rock types that are more resistant to erosion than the rock that underlies the valley separating the ridges. A thin layer of sediment deposited during the most recent glaciation covers the valley and parts of the ridges.
The southern ridge, the Gogebic Range, contains iron-rich rock that is approximately 1.9 billion years old. It was mined for iron ore from the 1880s through the 1960s. Soft iron ore was initially removed from shallow mines that have collapsed over time. Since the 1920s, harder, high-grade iron ore has been mined from depths as great as 5,200 feet. This ore was once a staple of the steel industry in the United States and drew many settlers to northern Wisconsin.
The northern ridge, the Trap Range, is distinctly different in composition from the southern ridge; it is younger volcanic rock, consisting primarily of basaltic lava flows that are approximately 1.1 billion years old. These types of flows are present mainly in the subsurface for nearly 1,200 miles as they gently arc from Lake Superior southwest to Minnesota, Iowa, Nebraska, and Kansas and southeast to Ontario, Michigan, and Ohio.
- 2. BLUE HILLS**
The Blue Hills rise approximately 600 feet above the surrounding landscape of northwestern Rusk, southwestern Sawyer, and northeastern Barron counties. The hills are composed of erosion-resistant red quartzite that is topped with a thin layer of glacial deposits. This quartzite, consisting of metamorphosed river and near-shore ocean sediment approximately 1.7 billion years old, is similar in age and appearance to the quartzite that forms the Baraboo Hills (see number 6, below) and several other prominent uplands in Wisconsin, Minnesota, and South Dakota. Some of these quartzite localities contain beds of calcinite (also called pipestone), a soft rock that is still quarried and carved into pipes and effigies by Native Americans.
- 3. MARGIN OF THE CHIPPEWA, WISCONSIN VALLEY, AND LANGLADE ICE LOBES**
The maximum extent of the Chippewa, Wisconsin Valley, and Langlade Lobes of the Laurentide Ice Sheet (fig. 1) in north-central Wisconsin is clearly marked in most places by narrow, sharp-crested ridges called moraines and a broad up to 6 miles wide band of uneven, knobby topography that is termed hummocky. This hummocky area consists of many poorly drained, bowl-shaped depressions, called kettles, which commonly contain wetlands or lakes. Blocks of ice that became detached from the margin of the glacier are buried by sediment, consisting primarily of sand, silt, and clay; subsequent melting of the ice blocks results in the uneven collapse of the overlying sediment and the formation of the kettles.
The margin of the three ice lobes is easily seen in Langlade, Lincoln, and Taylor counties. The hilly, rock-strewn landscape of this glaciated area is noticeably different from the rolling topography of the area to the south. As a result, the glacial boundary here is also a boundary between extensively cultivated areas to the south and less cultivated areas to the north.
- 4. NORTHERN HIGHLANDS**
The northern highlands area of Wisconsin is widely known for its forests, lakes, and wetlands. Most of these lakes and wetlands occupy kettles in broad plains deposited by rivers carrying meltwater and sediment, called outwash, from the Langlade, Wisconsin Valley, and Chippewa Lobes of the Laurentide Ice Sheet (fig. 1) as it receded from its maximum extent about 18,000 years ago. The area is mostly forested and contains the highest point in Wisconsin: Timms Hill, a thick accumulation of glacial debris, in Price County (elevation approximately 1,952 feet above sea level).
- 5. CENTRAL SAND PLAIN**
At its maximum extent around 20,000 years ago, the western margin of the Green Bay Lobe (fig. 1) advanced onto the eastern part of the Baraboo Hills (see number 6, below), dammed the upper Wisconsin River, and formed glacial Lake Wisconsin. The broad, flat sand plain of central Wisconsin was once the floor of this large glacial lake. As the maximum extent, the lake was about the size of the present-day Great Salt Lake in Utah. As the Green Bay Lobe began to recede, approximately 18,000 years ago, the lake drained, probably very rapidly, around the east end of the Baraboo Hills and into the lower Wisconsin River. This release of water from the lake down the river cut through the sandstone bedrock, forming Wisconsin Dells, and carried huge boulders and icebergs many miles downstream. The central sand plain is now home to forested areas and wetlands as well as the irrigated agricultural land in which most of the state's potatoes, cranberries, and vegetables are grown.
- 6. BARABOO HILLS**
The Baraboo Hills, which form an elongated, discontinuous ridge in Sauk and Columbia counties, rise approximately 700 feet above the surrounding landscape. They are composed of ancient river and near-shore ocean sediment, approximately 1.7 billion years old, which has been metamorphosed, folded, and lifted up. This rock, called quartzite, is distinctively red, extremely hard, and resistant to erosion. During the maximum extent of the most recent glaciation, approximately 20,000 years ago, the Green Bay Lobe of the Laurentide Ice Sheet surrounded the eastern half of the hills. It deposited moraines that block each end of an ancient valley that now contains Devils Lake. Today, the Baraboo Hills are one of the largest forested areas in southern Wisconsin and home to Devils Lake State Park.
- 7. LOWER WISCONSIN RIVER VALLEY**
The lower Wisconsin River was a major drainageway for meltwater from the Laurentide Ice Sheet. Huge volumes of glacial meltwater transported large amounts of sand and gravel and undercut the sandstone and dolomite adjacent to the river. This formed the steep bluffs that are a defining feature of the present-day lower Wisconsin River valley. Today, the steep bluffs, broad floodplain, and numerous sandbars make this stretch of the Wisconsin River a major attraction for recreation. Early in the history of North American exploration, this section of the river was part of the water route for trade and exploration from the Great Lakes to the upper Mississippi River. People could travel by boat from Green Bay up the northeastward-flowing Fox River to the present site of the city of Portage. At this location, boats were portaged approximately 2 miles across the drainage divide into the Wisconsin River, which flows into the Mississippi River near the city of Prairie du Chien.
- 8. BLUE MOUNDS**
The Blue Mounds are two prominent bedrock hills in the Driftless Area (fig. 1) near the border of Dane and Iowa counties. They are the highest points on the landscape in southern Wisconsin—300 to 500 feet above the rest of the terrain in this area. Both mounds are composed of shale and dolomite. Although shale is a fairly weak rock, the west mound looms above the surrounding landscape because it is capped by an approximately 100-foot-

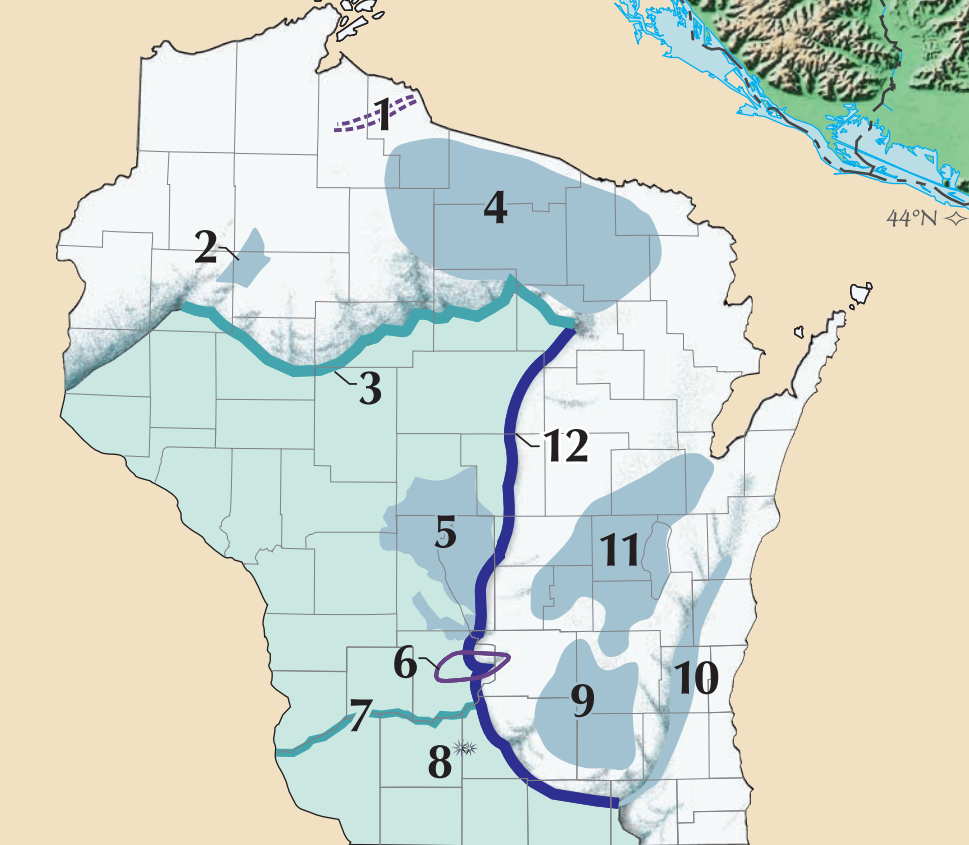


Figure 2. Map showing approximate locations of the features described in text.

thick layer of dolomite that has been converted to chert, which is extremely hard and resistant to erosion. Layers, called strata, of dolomite may have once covered much of southern Wisconsin, but were later eroded from all but the tops of these and several other mounds in far southwestern Wisconsin. Chert (also called flint) was used by Native Americans to make the tools that are found in the many archaeological sites in the area.

- 9. DRUMMINS OF THE SOUTHERN GREEN BAY LOBE**
In the central to southeastern part of the state, particularly Dane, Dodge, and Jefferson counties, well-developed landforms known as drumlins formed beneath the moving ice of the Green Bay Lobe, between about 20,000 and 15,000 years ago. The drumlins are generally teardrop-shaped hills that were formed parallel to ice flow and fan out toward the outermost marginal ridge of the lobe. For the most part, drumlins throughout Wisconsin are composed of sand and gravel, which is sometimes mined and used in the highway construction and building industries. Poorly drained, low-lying areas between drumlins may be occupied by wetlands; some higher, drier areas may be covered by prairie. Many drumlins can also be seen in Rusk and Forest counties.
- 10. KETTLE MORAINÉ**
The Kettle Moraine is a belt of irregular ridges and upland areas; it extends for more than 120 miles, mostly in Sheboygan, Washington, and Waushara counties. The Kettle Moraine is composed of glacial sediment deposited between the Green Bay and Lake Michigan Lobes approximately 18,000 to 15,000 years ago as they receded from their maximum positions during the most recent glaciation (fig. 1). The melting of these lobes produced large volumes of water that transported and deposited boulders, sand, silt, and clay that had melted out of the ice. This created elongated, broad plains composed of sand and gravel that are higher than the surrounding landscape. Within these plains lie kettles that were formed when large blocks of buried ice melted after the ice lobes advanced, large parts of the Kettle Moraine have been preserved in the Kettle Moraine State Forest.
- 11. GREEN BAY AND FOX RIVER LOWLAND**
The Green Bay and Fox River lowland is a conspicuous, broad, north-south trending area of eastern Wisconsin, primarily in Brown, Outagamie, Winnebago, Calumet, and Fond du Lac counties. Lakes Koshong, Kegonsa, and Winnebago as well as the Horton Marsh now occupy parts of this lowland. These watery areas are remnants of the much larger glacial Lake Oshkosh, which filled a large part of the lowland as the Green Bay Lobe advanced and later receded from the area (fig. 1). Lake Winnebago, the largest lake in the state, is bounded on its eastern margin by an escarpment of resistant dolomite that extends northward, forming the Door Peninsula. The dolomite strata dip eastward toward Lake Michigan and are a source of crushed stone and building material in the region.
- 12. MARGINAL RIDGE OF THE GREEN BAY LOBE**
The marginal ridges or moraines of the Green Bay Lobe are a result of the accumulation of sediment transported by the glacier. These marginal north-south trending moraines are especially visible in Marathon, Portage, and Waushara counties. As the Green Bay Lobe receded back into the Green Bay and Fox River lowlands, it stabilized at several positions, forming smaller, yet distinct, moraines that are especially noticeable in Shawano, Marinette, Menominee, and northeast Oconto counties.

FOR FURTHER READING:
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Schultz, C.M., 1986. *Wisconsin's Foundations*. Kendall/Hunt Publishing Company, Dubuque, Iowa, 211 p.

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This map is an interpretation of the data available at the time of preparation. Every reasonable effort has been made to ensure that this interpretation conforms to sound scientific and cartographic principles; however, the map should not be used to guide site-specific decisions without verification. Proper use of the map is the sole responsibility of the user.

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