

Geology and Natural History of the Mississippi River Gorge

Geologic History of the Gorge

- Only true gorge along entire 2,350 mile long Mississippi River.
- 45,000 to 12,000 years ago during the ice age, glaciers advanced and retreated many times over this area to slough away all the younger or top layers of rock formations.
- The glaciers melted 12,000 years ago, forming an immense amount of water to create our current rivers.
- St. Anthony Falls was formed 12,000 years ago near what is now downtown St. Paul. The falls receded upstream for 12,000 years to their current location near downtown Minneapolis.
- The geologic layers of the gorge include:

Glacial Till (Modern Soil)
Platteville Limestone
Glenwood Formation
St. Peter Sandstone

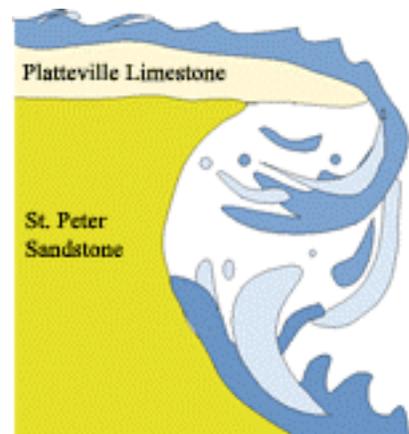
Glacial Till – this is our modern soil, which is sediment and till left from the movement of glaciers. It can be 100 feet thick in some areas.

Platteville Limestone – this layer is approximately 30 feet thick and contains fossils from the floor of an Ordovician Period Ocean, which covered the area.

Glenwood Formation – this is a very soft layer of shale, mainly remains from the Ordovician Sea.

St. Peter Sandstone – this is a softer sedimentary rock, which was easily carved away by the falls.

- The gorge was formed from the turbulent water of St. Anthony falls wearing away the lower soft layer of St. Peter Sandstone and undercutting the layers of shale and limestone above. Top layers began to crumble and the falls retreated slowly upstream for 12,000 years to their current location in Minneapolis.
- The falls continued this gradual carving action, receding at a rate of 4 feet per year and moving 10 miles upstream.



Mississippi National River & Recreation Area

- European settlers arrived in the 1800's while the falls were still receding. Wanting to preserve the falls as a source of power, they built a dam of sorts to stabilize the falls. If the falls were left to run naturally and continue their recession, eventually they would have smoothed out into rapids just north of downtown due to a change in streambed geology.
- 3,828 years ago the falls were located somewhere near the Railroad Bridge in Seward. This can be figured out by measuring the distance from the current location of the falls to any given point. Calculate that distance in feet and then divide by 4 feet (since the falls retreated 4 ft/yr). You will then have the number of years since the falls were at that selected point. One last step is to subtract 132 years due to the fact that the falls were actually stabilized in 1870.

Unique Geologic Features in the Seward Neighborhood

- There is an active spring located below the Winchell Trail near the Railroad Bridge. Formed from volcanic ash in a Bentonite Clay layer of the Platteville Limestone.
- The Hajduk Springs were located near 24th Street up until 1981. Named after a man who used the springs as a source of drinking water, in 1977 Hajduk publicized the spring and worked with the Minneapolis Park and Recreation Board to build stairs down to it. Shortly thereafter the springs dried up due to all the pavement and poor soil water recharge.

Some Natural History

- The gorge is used as a migration flyway for approximately 150 species of birds, including 45 nesting species. 40% of North America's migratory waterfowl use the river gorge as a migration corridor.
- Historically 120 native fish species thrived in the rapids of the gorge, 30 are currently remaining.
- Native ecosystem of oak forest with open spaces of prairie plants. Current ecology consists mainly of deciduous forest. There are more fire-sensitive species found due to the suppression of fire. Some of these species include maples, elms, basswood, as well as invasives such as buckthorn.
- Several human-induced problems are degrading the ecology of the gorge such as: exotic species, foot and bike traffic erosion, suppression of fire, re-routing of water (pavement and storm drains), and pollution in general.

Helpful Websites

www.npcr.org/reportsnpcr1097/npcr1097.html

www.amrivers.org/mississippiriver

www.nps.gov/miss/features/geology/geology.html