

Ice on the Delaware



c. 1851 - Emanuel Gottlieb Leutze

National Park Service
Upper Delaware Scenic and Recreational River

Ice Descriptors and Engineering

Anchor ice. Frazil ice attached or anchored to the river bottom, irrespective of the nature of its formation.

Beginning of breakup. Date of definite breaking, movement, or melting of ice cover or significant rise of water level.

Beginning of freezeup. Date on which ice forming a stable winter ice cover is first observed on the water surface.

Border ice. An ice sheet in the form of a long border attached to the bank or shore; shore ice.

Breakup. Disintegration of ice cover.

Breakup date. Date on which a body of water is first observed to be entirely clear of ice and remains clear thereafter.

Breakup jam. Ice jam that occurs as a result of the accumulation of broken ice pieces.

Breakup period. Period of disintegration of an ice cover.

cfs. Cubic feet per second, a measure of flow.

Channelization. Modification of a natural river channel; may include deepening, widening, or straightening.

Conveyance. A measure of the carrying capacity of the river channel.

Floc. A cluster of frazil particles.

Floe. An accumulation of frazil flocs (also known as a "pan") or a single piece of broken ice.

Floodplain. Land area adjoining a water body that is not normally submerged but may be submerged during flood conditions.

Frazil. Fine spicules, plates, or discoids of ice suspended in water. In rivers and lakes, frazil is formed in supercooled, turbulent water.

Frazil slush. An agglomerate of loosely packed frazil that floats or accumulates under an ice cover.

Freezeup date. Date on which the water body was first observed to be completely frozen over.

Freezeup jam. Ice jam formed as frazil ice accumulates and thickens.

Gorge. In the past, ice jams were sometimes referred to as "ice gorges."

Grounded ice. Ice that has run aground or is in contact with ground underneath it.

Hanging (ice) dam. A mass of ice composed mainly of frazil or broken ice deposited underneath an ice cover in a region of low flow velocity.

Hummock. A hillock of broken ice that has been forced up by pressure.

Ice arch. Frazil or fragmented ice that has stopped moving and bridges across a river channel; also called an "ice bridge."

Ice jam. A stationary accumulation of fragmented ice or frazil that restricts or blocks a stream channel. The term "ice gorge" is also used in some areas.

Overbank flow. Flow that exceeds the level of the river's banks and extends into the floodplain.

Riprap. Rocks strategically placed against riverbanks or beds to prevent erosion of underlying material.

Sheet ice. A smooth, continuous ice cover formed by in situ freezing (lake ice) or by the arrest and juxtaposition of ice floes in a single layer.

Supercooled water. Water whose temperature is slightly below the freezing point (32 °F or 0 °C).

Thalweg. Deepest portion of the river channel; the line of major flow.

Water slope. Change in water surface elevation per unit distance.

Water stage. The water surface elevation above the bottom of the river channel.

Weir. Barrier placed in a river to raise water elevation.

Ice Observations

| ICE OBSERVATIONS | DATE 01 28 05 | NOTES / COMMENTS |
|-----------------------------|---|---|
| NARROWSBURG TO TMR | Open w/ floating slush ice Approx 20 % shore ice w/ anchor ice in shallow areas | Narrowsburg Pool approx 60% ice covered w/ hummock ice |
| T M R TO LACKAWAXEN / RB | Open w/ floating slush ice Approx 25 % shore ice TMR Pool, open center | |
| LACK / RB TO SHOHOLA BR | Open w/ floating slush ice | |
| SHOHOLA TO B.O. HANSOM | Open w/ floating slush ice Hansom Eddy ice covered w/ hummock ice | |
| HANSOM EDDY TO POND EDDY | Open w/ floating slush ice Approx 15% shore ice Anchor ice in shallow areas | Pond Eddy Pool ice covered w/ hummock ice |
| POND EDDY TO MONGAUP RIV | Open w/ floating slush ice Approx 20% shore ice | |

Ice on the East Branch in Hancock



Ice below Lordville, NY piled up



Ice North of Equinunk, PA



Ice above Callicoon



Ice on River at Callicoon



Ice at Skinners Falls



Ice on the Narrowsburg Pool



Ice flow at Narrowsburg Bridge



Narrowsburg DEC access



Ice pushed onto the Narrowsburg Access



Narrowsburg DEC Access



Ice at Narrowsburg Pool



Ice above the Narrowsburg Bridge



Ice on the river at Lackawaxen



Ice buildup at Pond Eddy



Aerial view of the river



Ice Movement

