

Topic Page: [Drumlins](#)

Definition: **drumlin** from *The Columbia Encyclopedia*

(drŭm'lĭn), smooth oval hill of glacial drift, elongated in the direction of the movement of the ice that deposited it. Drumlins, which may be more than 150 ft (45 m) high and more than 1/2 mi (.8 km) long, are common in New York, Wisconsin, Canada, and Northern Ireland.

Summary Article: **DRUMLINS**

From *Encyclopedia of Earth Sciences Series: Encyclopedia of Paleoclimatology and Ancient Environments*

A drumlin is a subglacial landform that appears as a distinctive streamlined hill of sediment in the postglacial landscape. The term is derived from a Gaelic word meaning a mound or rounded hill. Drumlins vary significantly in size, shape and composition, and their origins remain controversial.

Drumlins are streamlined in the direction of ice movement, with a degree of elongation typically about 3:1 but sometimes as much as 60:1. At higher elongations drumlins grade into megaflutes. The up-glacier (stoss) end is typically the steeper and blunter while the downstream (lee) face is more gently sloping and more sharply pointed in plan form. Drumlins may occur singly or in “swarms” containing hundreds or thousands of hills. The largest drumlins reach 50 m in height and may be 20 km long, while the smallest examples are only 10 m long and grade into other classes of smaller streamlined features such as flutes. Small drumlins can be superimposed on larger ones.

The composition of drumlins is variable but typically dominated by massive diamicton usually interpreted as till. Some drumlins contain a rock core and many include coarse stratified glaciofluvial deposits. The material is often highly deformed.

Several different origins for drumlins have been proposed and it is likely that different drumlins are formed in different ways. Some models suggest that drumlins are remnants of subglacial erosion of previously deposited sediments. It has been suggested that erosion was accomplished by huge subglacial “megafloods.” Other models suggest that drumlins are depositional features reflecting either subglacial lodgment or meltout. Many theories propose that the key processes are deformational. A widely accepted model is that drumlins are created by differential movement of material within a deforming subglacial sediment layer. The drumlins reflect areas of less mobile sediment while intervening areas reflect more rapidly moving material. Stratified sediments in some drumlins have been interpreted as lee side stratification sequences in water-filled cavities on the downstream end of drumlins. The flow of water through subglacial sediment under varying pressures, and the deformation of material in response to both glacial and water pressure are central to much current thinking about drumlins.

It has been suggested that drumlins form in a narrow belt only 20-30 km wide close to an ice-sheet margin. As the margin retreats, the zone migrates, and extensive fields of drumlins can be created in a time-transgressive sequence. It has also been suggested that drumlin fields mark the positions of former ice streams. Although drumlins are possibly the most intensively studied glacial landform, our understanding of them remains incomplete. However, it is clear that they have the potential to provide important information about former ice sheets both through their geographic distribution and through

their sedimentology. Useful reviews are provided by Benn and Evans (1996), Bennett and Glasser (1996) and Hambrey (1994).

Cross-references

Basal ice

Diamicton

Glacial geomorphology

Glaciofluvial sediments

Late Quaternary megafloods

Tills & tillites

Bibliography

- Benn, D.I.; Evans, D.J.A. 1998. *Glaciers and Glaciation*. Arnold London UK 734pp.
- Bennett, M.R.; Glasser, N.F. 1996. *Glacial Geology*. John Wiley and sons Chichester UK 364pp.
- Hambrey, M.J., 1994. *Glacial Environments*. UCL Press Ltd. London UK 296pp.

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Knight, P. G. (2009). Drumlins. In V. Gornitz, *Encyclopedia of Earth Sciences Series: Encyclopedia of paleoclimatology and ancient environments*. Dordrecht, The Netherlands: Springer Science+Business Media. Retrieved from <https://search.credoreference.com/content/topic/drumlins>

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Knight, P. G. (2009). Drumlins. In V. Gornitz, *Encyclopedia of Earth Sciences Series: Encyclopedia of paleoclimatology and ancient environments*. Dordrecht, The Netherlands: Springer Science+Business Media. Retrieved from <https://search.credoreference.com/content/topic/drumlins>

Chicago

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<https://search.credoreference.com/content/topic/drumlins>

Harvard

Knight, P.G. (2009). Drumlins. In V. Gornitz, *Encyclopedia of Earth Sciences Series: Encyclopedia of paleoclimatology and ancient environments*. [Online]. Dordrecht: Springer Science+Business Media. Available from: <https://search.credoreference.com/content/topic/drumlins> [Accessed 19 November 2019].

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