
Landslides and avalanches in Cape Breton Island,
Nova Scotia, Canada

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Landslides and avalanches are common occurrences in Cape Breton Island, particularly within the highly-incised river valleys common to highland regions. Both have resulted in significant environmental impact and injury or loss of life. Failure is most common on steep slopes ($> 30^\circ$) where either highly compacted, impermeable clay-rich lodgement till or impermeable weathered bedrock is overlain by highly permeable colluvium. Redirected surface and ground water accumulates at the base of the colluvium producing an effective glide plane for initial translational movement. Complex failures involving rock topple, rotation slip, translational sliding and flow have been recognized throughout the Cape Breton Island; large scale rock slumps (sackung) have also been noted. Avalanches occur in all highland regions but one in particular has been documented in the East Bay Hills. A particularly large avalanche occurred on February 5th, 1856 in which five people were killed and their home was destroyed. This avalanche was preceded by heavy snow and rain which increased snow-water content which led to failure at the base of the snowpack.

Rock slides have caused problems on highways in the Cape Breton Highlands. Geo-technical and construction methods to control rock slides on Cape Breton Highland highways have met with varying degrees of success due to costs and terrain obstacles. A landslide hazard model has been completed for the Cape Breton Highlands National Park. Continued hazard documentation and mapping is required to better delineate vulnerable areas.