The curious phenomenon of Forest Rings, what they are, how they form and why most are found in Ontario.

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Forest rings are light-coloured circular features in the boreal forest in northern Canada, ranging in diameter from 50 m to 1.6 km. They were first observed for more than 50 years ago and are visible on aerial photographs and satellite images and from aircraft. Rings often occur in equal-sized clusters and the most common clustered sizes are approximately 150 m, 350-600 m and 900 m-1.1 km. The preponderance of the more than 2000 known rings occur in a band from north of Lake Nipigon, through northeastern Ontario to westernmost Quebec. The eastward disappearance of rings in Quebec occurs at the north-south Haricanna Moraine, which coincides with a sudden drop in the carbonate content of soils. The rings re-appear in the Gulf of St. Lawrence on Anticosti Island, which is underlain by carbonate sedimentary rock. Similar forest-ring features have been anecdotally reported in Russia, the Yukon and Minnesota and several have been reported in Colorado and Australia.

The OGS determined more than a decade ago that Forest Rings are the surface expression of 'reduced chimneys' similar to those that have been documented in overburden above mineral deposits. As a result, studies were carried out to determine the source of the negative redox anomaly at the centre of a number of rings. In addition to reduced conditions in soils and groundwater inside the ring, a prominent carbonate depletion occurs in the ring annulus and contributes to a depression in the mineral soil of up to two metres. The prevailing theory is that all rings are centred on reduced geological sources and reduced species such as Fe^{2+} or HS^- migrate outward along electrochemical gradients and oxidize in the annulus of the ring, generating acid and dissolving carbonate. The less alkaline and moister soil in the annular depression supports a plant assemblage that is different from the surrounding forest making the features visible from the air. Of the dozen or so rings investigated in detail, all but two are centred on accumulations of natural-gas in clay-rich overburden or bedrock. One other is centred on an accumulation of $H_2S(aq)$ and one has an unknown source.