

The barrier effect of twin tracked, non fenced railroads in Sweden

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Key Words: Barrier effect, railroads, ungulates, Sweden

Fenced infrastructure composes an almost total barrier for larger wildlife, and movements across the road or railroad are thus restricted to fauna passages, fence openings and other mitigation measures. However, the strength of the barrier caused by non fenced railroad systems is not sufficiently studied. The present Swedish railroad system is mostly single tracked and poorly mitigated for wildlife connectivity, but as new larger lines with high traffic volumes are planned, this question has to be evaluated.

In theory, the barrier effect caused by a railroad may vary depending on the traffic volume, railroad width and other characteristics of the embankment, and be species specific. The aim of the study was to quantify moose and roe deer movements across and near railroad systems, and to quantify the barrier effect caused by non fenced railroads with different traffic volumes. The snow track survey was conducted at two transects parallel to the railroad. The transect near the railroad were used to control movements across the embankment and movements near the railroad, and the transect 200 meters from the railroad were used as a reference.

In total, 152 km of railroads and an equal length of reference transects were studied. Moose and roe deer crossed the railroad in average 0,065 and 0,46 times per day and km respectively during the study. No structural effects of single or twin tracked railroad systems could be found on moose and roe deer movements across the embankment. However a significant effect from train volume was found for both moose and roe deer. The results indicated that an increased traffic volume effects ungulate movements across the railroad and thus connectivity plans for wildlife should be used on present high volume lines and when planning new high volume lines.