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**The Impact of Off-road Vehicles on the Limestone Barrens Habitat and
Resident Plants Endemic to
the Great Northern Peninsula, Newfoundland, Canada**

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Abstract

The impacts of off-road vehicles (ORVs) on natural habitats have long been a concern to managers of protected areas. As a means of recreation and livelihood, ORVs such as all-terrain vehicles (ATVs) are important to residents in rural areas. ORVs, as with any type of trampling, will have some level of impact on the landscape, particularly where repeated use occurs. This study examines the direct effects of ORVs on the substrate and plants endemic to the Limestone Barrens of the Great Northern Peninsula, as well as the indirect effects on the plants due to changes in the substrate. Three areas were chosen based on their known range of vehicle use and as locations of the three rare endemic plants *Salix jejuna*, *Braya longii*, and *B. fernaldii*. Significant differences in level of impact were found across these sites. Level of impact coincided with differences in vehicle use, and as predicted, was also strongly affected by differences in substrate characteristics. The most anthropogenically modified sites showed least response to disturbance because these areas have already sustained wide-spread and severe damage from ORV. More natural areas with intact frost worked substrates showed the highest impact of ORV as some of the areas were in a relatively pristine condition. All sites, regardless of intensity of vehicle traffic, were found to have damage to the plants and their habitat. Plants were found uprooted in tracks, or had leaves or stems cracked. Their natural micro-habitat of soil between up-ended gravel, which offers protection during early growth, was compacted. Overall, the compaction caused by ORV diminishes the protection that the frost-worked substrate offers to the resident plants. In the already low-profile microtopography of the Limestone Barrens, even this minor amount of relief is

beneficial and possibly necessary for the long-term health of the Barrens plant populations. In order to protect the distinct Limestone Barrens habitat and its endemic plants, ORV use must be restricted to designated areas that minimize the damage to the habitat. If such areas are not found, or if ORV use continues outside of designated areas, their use needs to be prohibited.