Using remote sensing to monitor *Kalmia angustifolia* encroachment on disturbed forest sites in central Newfoundland

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Kalmia angustifolia (sheep laurel, "Kalmia") is an ericaceous shrub which occurs naturally throughout central Newfoundland, often as a low-density understorey species associated with black spruce. However, Kalmia can spread rapidly following disturbances such as logging or fire and impede subsequent regeneration of spruce. Once established, Kalmia is difficult to eradicate. Priority is presently given to regenerating disturbed sites with a Kalmia density of <50%, as spruce planted on sites with a Kalmia cover greater than this often perform very poorly. Spaceborne multispectral sensor systems potentially offer the most cost-effective means of detecting and mapping Kalmia over large areas, and for monitoring the spread of this species. Work using an airborne multispectral scanner (CASI) has shown that Kalmia is spectrally distinct from other commonly associated species. However, it is not clear whether the relatively large GRE of

spaceborne systems would be able to discriminate this species where its distribution is patchy (a common occurrence) or at what point the "background" reflectance of soil and other species would contaminate the spectral response to such a degree that Kalmia is no longer recognizable. Work is on-going to develop techniques and methodologies to map the distribution of Kalmia using several operational classes. This will assist foresters to make more informed decisions when setting priorities for reforestation efforts. Future work will focus on the wider project objective of using high spectral resolution remote sensing as a means of detecting and quantifying differences in site quality (mainly fertility) as indicated by differences in canopy chemistry, as this would further assist both in planning silvicultural activities as well as in predicting future wood supply from these "problem" sites.