A proposal to judge environmental change on Bon Portage Island, Nova Scotia using landsat thematic mapper imagery

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Landsat Thematic Mapper (TM) Imagery has been recognized as a useful tool with which to detect short-term environmental change. In this study, two Landsat TM mini-scenes separated by eight years (7/6/87; 31/7/95) were used to determine whether short-term environmental change on Bon Portage Island, Nova Scotia could be detected. We focused on detecting changes in floral ecology over the study period by determining the change in the spectral signature of 7 test plots on the island. Changes in the spectral signature of two deep water sites near the island were used to calibrate the two mini-scenes.

The majority of the test plots showed an increase in the mean DN values over the study period for bands 1, 2, 3, 4, and 7. Ambiguous results occurred in test plot 7 for bands 4 and 7. Four of the seven test plots showed an increase in the mean DN value in band 5, whereas for the other 3, the DN values dropped. These results suggest that over the study period significant change occurred in the floral communities within the test plots. An overall increase in DN values could be attributed to an increase in the health, vigour, and floral biomass of the test plots. However, this increase may have been influenced by higher rainfall and a longer growing season that characterized the months before the acquisition of the 1995 imagery. We conclude that short-term environmental change detection at coastal sites is possible, however, the noise created by specific events preceding the acquisition of the imagery must be considered in the assessment of the magnitude of this change.