

A GIS-Based Multiple-Criteria Decision Analysis of Marine and Coastal Management Areas off Western Newfoundland, Canada.

Rebecca D. E. Brushett

Marine and coastal environments are highly integrated systems with significant ecological and biological areas. They influence the structure and function of the ecosystem; playing the lead role in maintaining the biodiversity and productivity of multiple areas (DFO, 2013). These significant regions are important to the stability of the ocean but also, to the socio-cultural and economic well-being of communities located along the coast (Murray, et al. 2014). Many areas are vulnerable to “agents of change” from in and outside of the system. Such "agents of change" include but are not limited to climate change, commercial fishing, oil and gas activities, tourism and recreation (DFO 2013, Selkoe, *et al* 2009).

Management tools are necessary to effectively assess cumulative effects in a quantitative manner when decision making involves stakeholders from multi-sectors with competing objectives (Green, 2010, Selkoe, *et. al* 2009). This study will use GIS-based multiple-criteria decision analysis (MCDA) software as a management tool to quantitatively assess the impacts and possible cumulative environmental effects from multiple stressors off western Newfoundland, Canada.

Once complete this report will serve as a management tool that can be used to maintain, i) ecological integrity of coastal and marine ecosystems off western Newfoundland, CAN and, ii) it will promote common awareness, assessment and action by stakeholders, policy makers and scientists to promote sustainable development in the marine and coastal environment.