Landscape connectivity: The key feature required for the persistence and potential expansion of peripheral species

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Emerging measures of landscape connectivity that have an intuitive biological interpretation can aid in the selection of sites and habitat networks for the protection of species at risk. The importance of acquiring field data to validate our expectations about the significance of landscape connectivity cannot be overemphasized as there have been numerous theoretical (and only a few empirical) studies that suggest connectivity can be either beneficial or detrimental to a population. In peripheral areas of a species range, where the habitat is highly fragmented (as is the case for the 'threatened' Hooded Warbler, *Wilsonia citrina,* in S. Ontario), only those habitat patches that are physically accessible, should be occupied. From what we know of area sensitive bird populations, the largest, connected patches should be occupied first and smaller patches in the surrounding area should be occupied only if such patches are accessible (within dispersal range) and have adequate resources. Assuming that birds only occupy areas with viable resources, then if landscape connectivity measures can predict which patches (of equal resource value) are occupied in a fragmented system, then our knowledge (models) of the import of landscape connectivity can be verified. We test whether our model which evaluates the importance of landscape structural connectivity (the shape, size, number of connecting links depending on the location of features on a landscape, and the effective cluster size at different threshold distances) can be used to predict which patches will be occupied in the field. We surveyed selected patches within 20 km of a known population of Hooded warblers. Preliminary results indicate that this species was found in highly connected patches, but generally not in poorly connected ones.